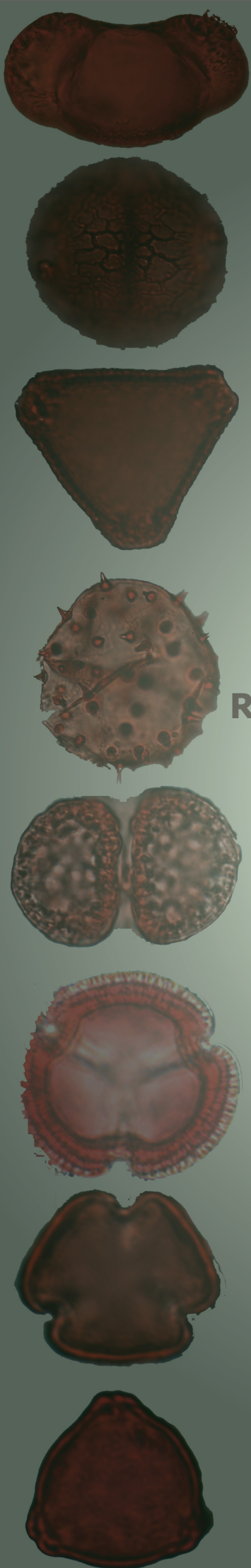


# Pollen and spores of Southern Chile and the Juan Fernandez Archipelago

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Australian National University



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# Chilean Pollen Reference Collection

ARALIACEAE *Pseudopanax laetevirens* (Gay) Franch.

Collection Location Region XI, Chile

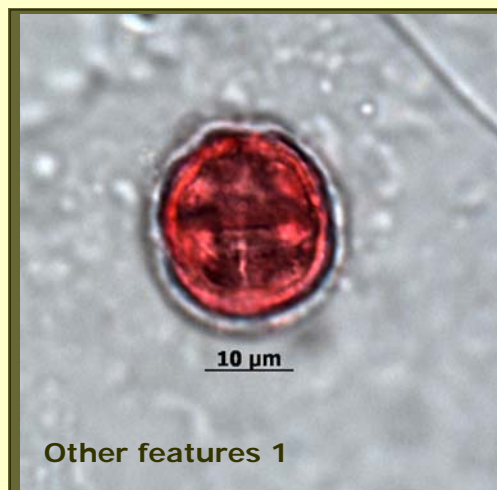
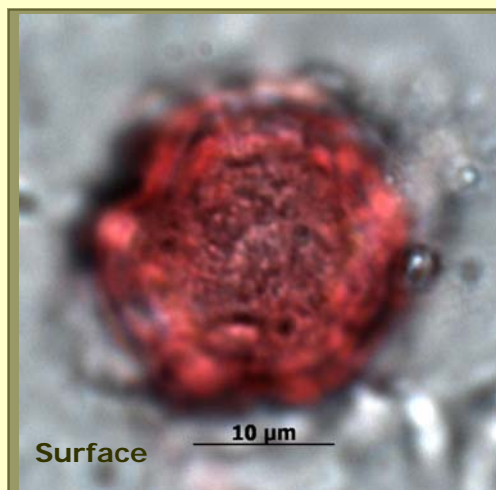
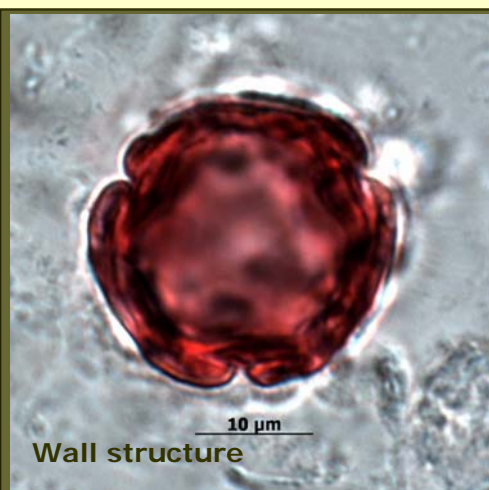
Slide Collection Cambridge

Coll. No. 128

Notes Grains not clear on slide.

**Ecology and Geographical Distribution:** Shrub, found in coastal mixed *Drimys-Nothofagus* forest. Range: Chile south of 35°S, W. Tierra del Fuego; Coastal 500-2000m; Interior to treeline..

**Pollen morphology:** Pollen, in monad arrangement. Form: tricolporate, with 3 apertures. In polar view, shape is tri-lobate: 18-24 µm. In equatorial view, shape is subprolate: 20-23 µm. Exine is ~1.8µm, even, fine reticulate. Pores: rectangular(broad), 1.8 x 3µm, sunken pore. Colpi: 1/2 length, 2.7µm.



Other features 2



References for plant photos and ecological descriptions: 1, 12

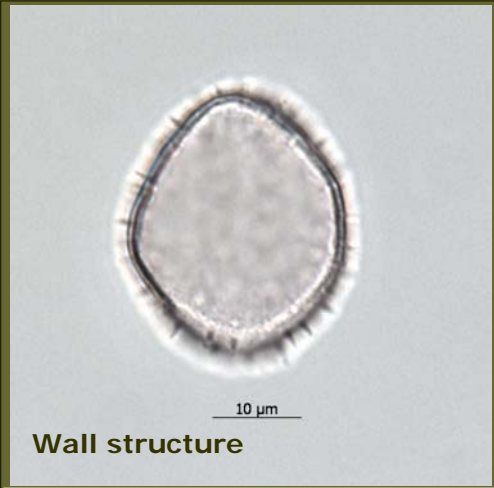


ASTELIACEAE *Astelia pumila* R.Br.

Collection Location	Region XI, Chile		
Slide Collection	Cambridge	Coll. No.	95.19
Notes			

**Ecology and Geographical Distribution:** Herb, forming carpet, found in wet areas, often dominant to form conspicuous patches. Range: Chile south of 40°S, Tierra del Fuego; 0-600m.

**Pollen morphology:** Pollen, in monad arrangement. Form: monocolpate(monosulcate), with 1 apertures. In polar view, shape is circular: 25-30 µm. In equatorial view, shape is irregular to pear shaped: 25-30 µm. Grain shape is irregular to pear shaped. Exine is ~1.7µm, even, echinate. Pores: N/A, -µm, . Colpi: 1/2 length, ~1µm.





## ASTERACEAE *Chiliotrichum diffusum* Kuntze

Collection Location Region XI, Chile

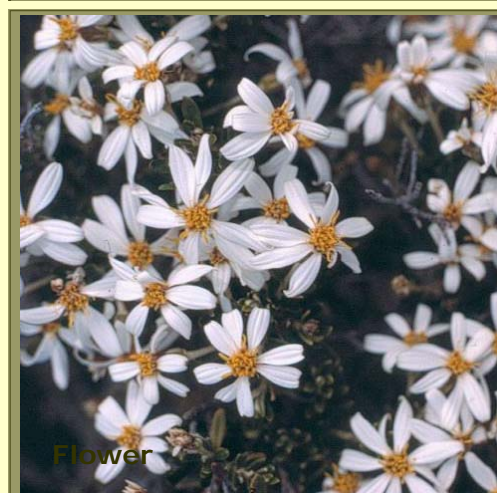
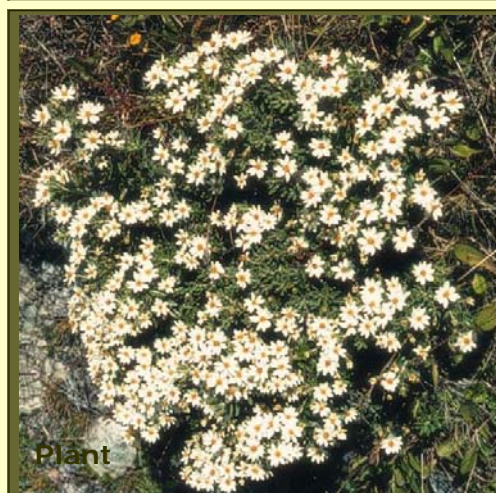
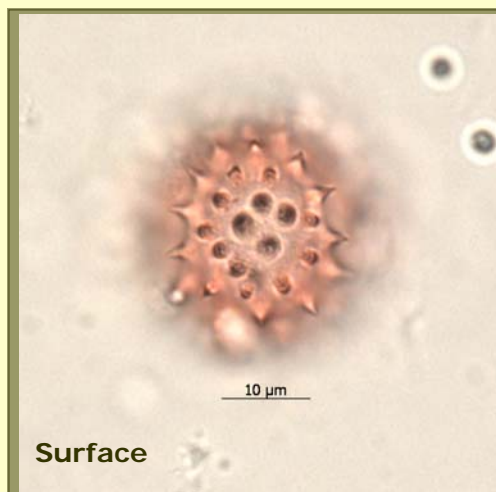
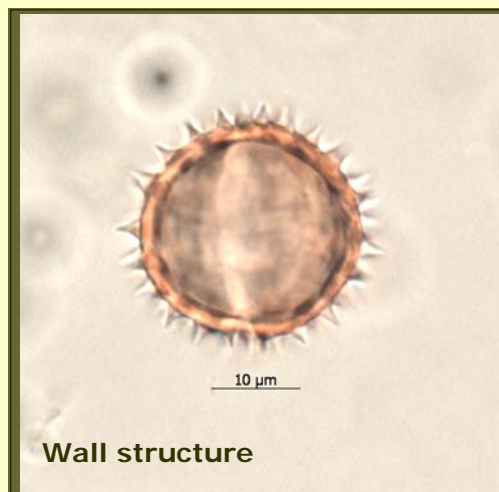
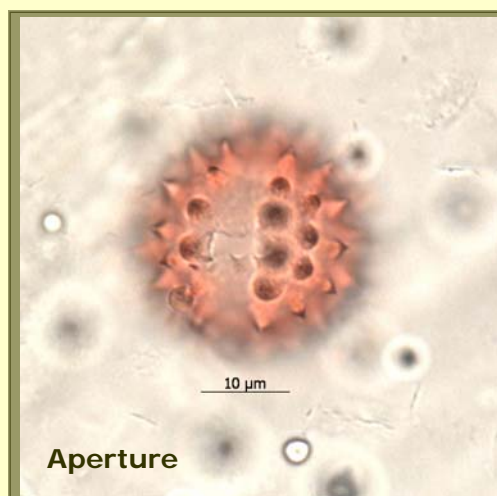
Slide Collection Cambridge

Coll. No. 91.47

Notes

**Ecology and Geographical Distribution:** Evergreen shrub, found in shrub communities at margins and in clearings of evergreen and deciduous forest, drier parts of bogs, rock-crevices, stream-sides.. Range: Chile south of 47°S, Tierra del Fuego; 0-400m.

**Pollen morphology:** Pollen, in monad arrangement. Form: tricolporate, with 3 apertures. In polar view, shape is tri-lobate: 25-27  $\mu\text{m}$ . In equatorial view, shape is circular: 23-25  $\mu\text{m}$ . Exine is  $\sim 2.5\text{--}3.5\mu\text{m}$ , even, echinate. Pores: rectangular(broad), 3-5 $\mu\text{m}$ , plain. Colpi: full length, 3-5 $\mu\text{m}$ .



References for plant photos and ecological descriptions: 1, 6

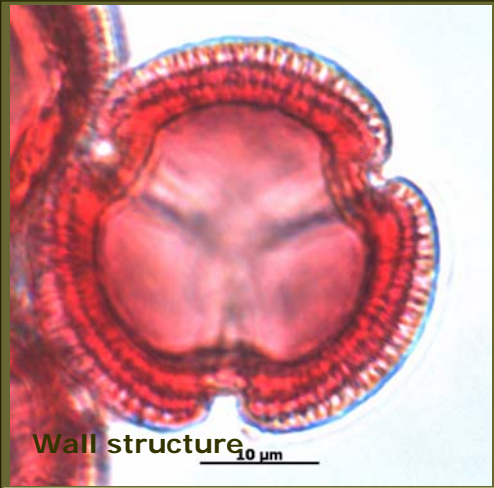


ASTERACEAE *Perezia magellanica* Lag.

Collection Location	Region XI, Chile		
Slide Collection	Cambridge	Coll. No.	95.23
Notes			

**Ecology and Geographical Distribution:** Herb, found in bogs, swamps, wet grassland, wet rocks, feldmark. Range: Chile south of 46°S, Tierra del Fuego; 0-800m.

**Pollen morphology:** Pollen, in monad arrangement. Form: tricolporate, with 3 apertures. In polar view, shape is tri-lobate: 30-34  $\mu\text{m}$ . In equatorial view, shape is circular: 30-33  $\mu\text{m}$ . Exine is  $\sim$ 5-6 $\mu\text{m}$ , even, reticulate. Pores: squared, 4-6 $\mu\text{m}$ , sunken pore. Colpi: full length, 4-6 $\mu\text{m}$ .





## BERBERIDACEAE *Berberis darwinii* Hook.

Collection Location	Region XI, Chile		
Slide Collection	Cambridge	Coll. No.	95.27
Notes			

**Ecology and Geographical Distribution:** Shrub, found in medium elevations, within forests, often associated with *Nothofagus dombeyi* and in rather humid conditions. Widely used as a hedge plant in Europe and N. America. Range: Southern Chile, regions V to XI; coastal mountains, interior valleys and up to 3000m.

**Pollen morphology:** Pollen, in monad arrangement. Form: spiraperturate, with 1 apertures. In polar view, shape is circular: 39-48  $\mu\text{m}$ . In equatorial view, shape is circular: 39-48  $\mu\text{m}$ . Apolar grain, apertures can be arranged as in a tennis ball, can be closed to raggedly open. Exine is  $\sim 2\text{-}3\mu\text{m}$ , even, perforate. Pores: N/A,  $\mu\text{m}$ . Colpi: ragged, 0-5 $\mu\text{m}$ .



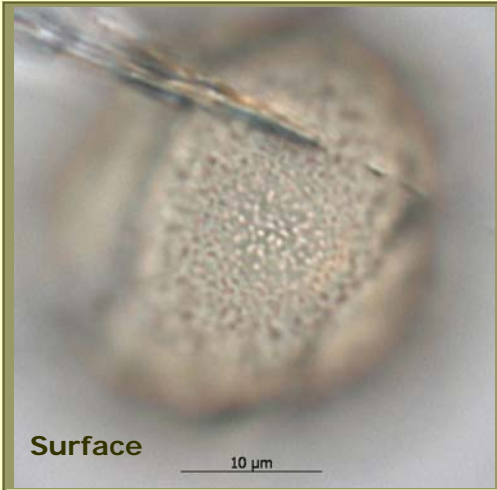
References for plant photos and ecological descriptions: 5, 6, 12

BERBERIDACEAE *Berberis thibetica* C.K.Schneid.

Collection Location			
Slide Collection	ANU	Coll. No.	91-1-3
Notes	Photos taken of this species to compare with <i>B. darwinii</i> . Chinese native?		

Ecology and Geographical Distribution: , found in . Range: ; .

**Pollen morphology:** Pollen, in monad arrangement. Form: spiraperturate, with 1 apertures. In polar view, shape is circular: 29-35  $\mu\text{m}$ . In equatorial view, shape is circular: 29-35  $\mu\text{m}$ . Apolar grain, apertures arranged as in a tennis ball. Exine is  $\sim 1\text{-}2\mu\text{m}$ , even, perforate. Pores: N/A,  $\sim\mu\text{m}$ , . Colpi: irregular, 0-5 $\mu\text{m}$ .



References for plant photos and ecological descriptions:

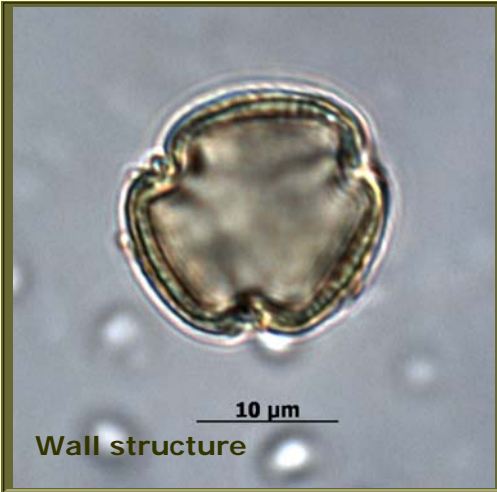
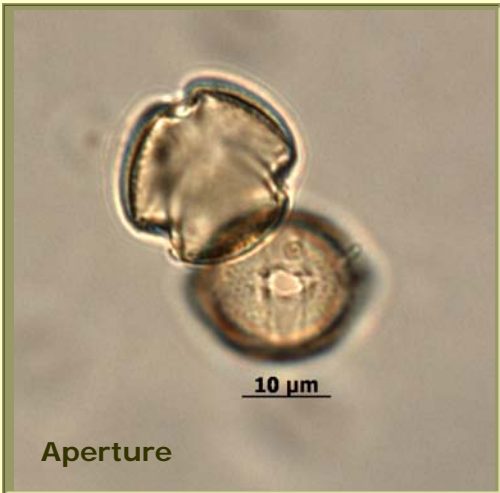


CELASTRACEAE *Maytenus cunninghamii* (Hook.) Loes.

Collection Location	Qld, Australia		
Slide Collection	ANU	Coll. No.	160-14-1
Notes	NOT FROM CHILE: Included as an example of the genus.		

**Ecology and Geographical Distribution:** Shrub, found in dry sclerophyll forest and woodland, often in exposed sites. Range: NOT FROM CHILE, found in NSW, Qld, WA, NT; inland, not alpine.

**Pollen morphology:** Pollen, in monad arrangement. Form: tricolporate, with 3 apertures. In polar view, shape is triangular(convex): 16-18 µm. In equatorial view, shape is suboblate: 15-20 µm. Exine is ~2µm, thicker on pole, reticulate. Pores: elliptic(broad), 2.5-4µm, plain. Colpi: 2/3 length, 3µm.

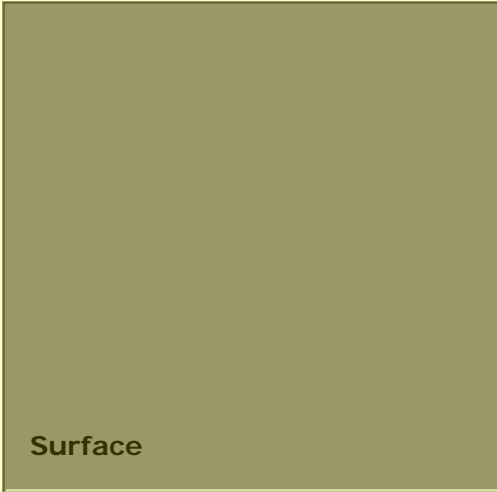
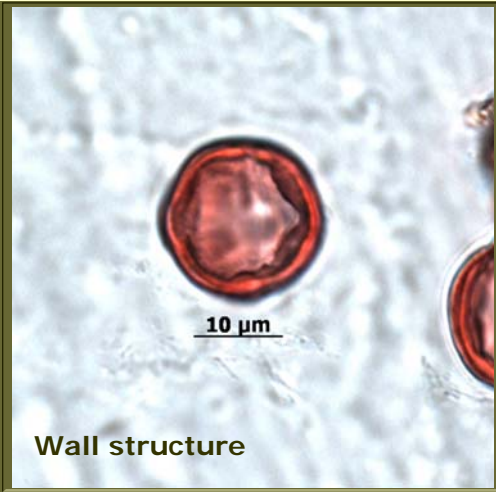


CELASTRACEAE *Maytenus* sp.

Collection Location	Region XI, Chile		
Slide Collection	Cambridge	Coll. No.	95.34
Notes	Grains on this slide are immature and features are difficult to see. Mature grains may be reticulate (Heusser, 1971).		

**Ecology and Geographical Distribution:** Trees or shrubs, found in forests. Range: Southern Chile; various.

**Pollen morphology:** Pollen, in monad arrangement. Form: tricolporate, with 3 apertures. In polar view, shape is circular: 16-20 µm. In equatorial view, shape is circular: 16-20 µm. Exine is ~1.5µm, thicker on pole, scabrate. Pores: Indistinct, ~1.5µm, sunken pore. Colpi: full length, ~2µm.



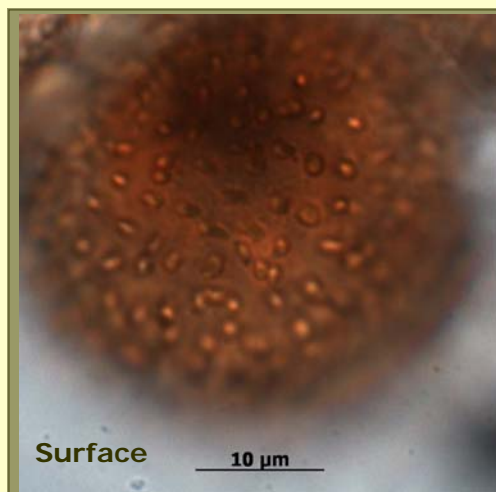
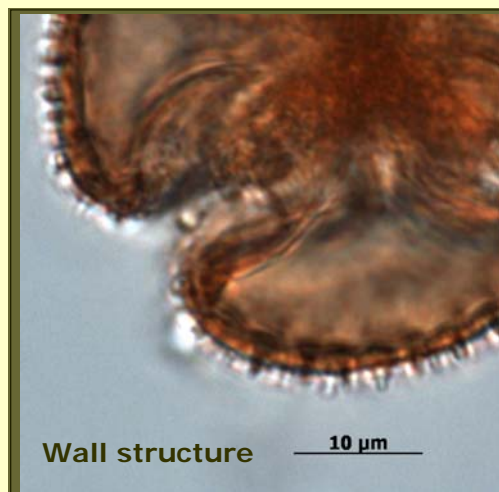
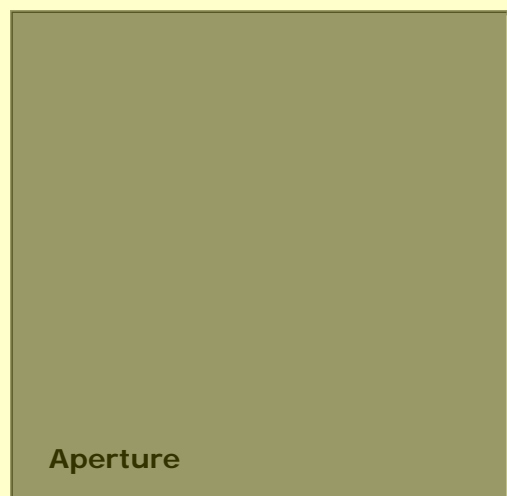


## DROSERACEAE *Drosera uniflora* Willd.

Collection Location	Region XI, Chile		
Slide Collection	Cambridge	Coll. No.	95.20
Notes			

**Ecology and Geographical Distribution:** Perennial herb, found in wet open peat and gravel, *Sphagnum* bogs, wet communities dominated by *Astelia*, *Gaimardia* and *Rostkovia*. Range: Chile south of 40°S, Tierra del Fuego, Falkland Islands; 0-650m.

**Pollen morphology:** Pollen, in tetrad arrangement. Form: inaperturate, with 0 apertures. In polar view, shape is triangular(straight): 29-34  $\mu\text{m}$ . In equatorial view, shape is triangular: 15-20  $\mu\text{m}$ . Total size of tetrad 35-59 $\mu\text{m}$ . Exine is  $\sim$ 1.9-2.7 $\mu\text{m}$ , even, echinate. Pores: N/A, - $\mu\text{m}$ , . Colpi: N/A, - $\mu\text{m}$ .



References for plant photos and ecological descriptions: 1, 14



# Chilean Pollen Reference Collection

ERICACEAE *Pernettya mucronata* Gaudich. ex G.Don

Collection Location Region XI, Chile

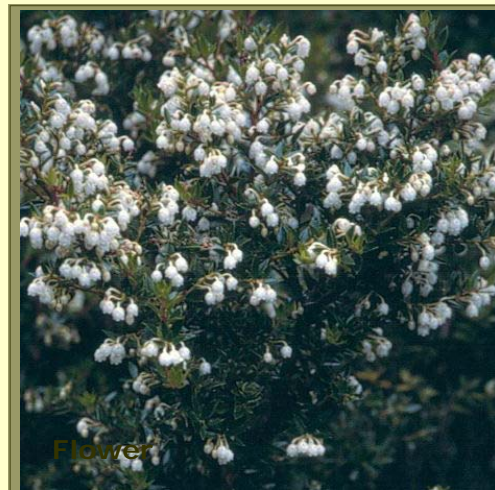
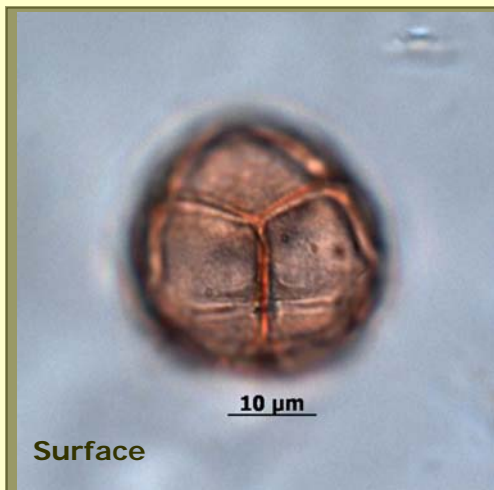
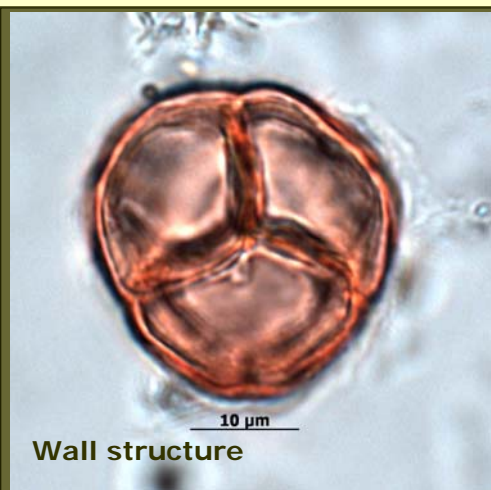
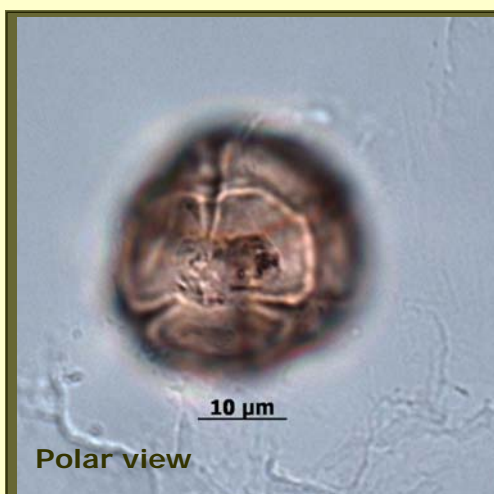
Slide Collection Cambridge

Coll. No. 91.9

Notes

**Ecology and Geographical Distribution:** Evergreen shrub, found in open, wet *Nothofagus* and *Drimys* forest, shrub communities fringing forest above highwater mark, transition to swamps and bogs. Range: Chile south of 37°S, Tierra del Fuego; 0-700m.

**Pollen morphology:** Pollen, in tetrad arrangement. Form: tricolporate, with 3 apertures. In polar view, shape is tri-lobate: 21-23  $\mu\text{m}$ . In equatorial view, shape is rectangular(broad): 13-15  $\mu\text{m}$ . Size of whole tetrad 25-28 $\mu\text{m}$ . Components not found individually. Exine is  $\sim 0.9$ -1.2 $\mu\text{m}$ , even, psilate. Pores: Indistinct,  $\mu\text{m}$ , plain. Colpi: 1/2 length, 1 $\mu\text{m}$ .



References for plant photos and ecological descriptions: 1, 6



# Chilean Pollen Reference Collection

ERICACEAE *Pernettya pumila* Hook.

Collection Location Region XI, Chile

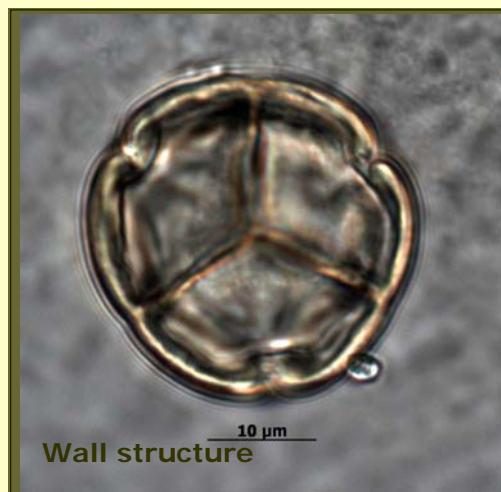
Slide Collection Cambridge

Coll. No. 95.24

Notes Grains on this slide appear to be immature.

**Ecology and Geographical Distribution:** Evergreen shrub, found in *Empetrum* heath, bogs and swamps open wet *Nothofagus* forest, open peat and sand, rock crevices. Range: Chile south of ~50°S, Tierra del Fuego, Falkland Islands; 0-900m.

**Pollen morphology:** Pollen, in tetrad arrangement. Form: tricolporate, with 3 apertures. In polar view, shape is tri-lobate: 21-23 µm. In equatorial view, shape is rectangular(broad): 13-15 µm. Total tetrad size 25-31µm. Components not found individually. Exine is ~0.9-1.2µm, even, psilate. Pores: Indistinct, <3µm, plain. Colpi: 1/2 length, 3µm.



References for plant photos and ecological descriptions: 1, 6

## ERICACEAE *Pernettya rigida* DC.

Collection Location Region XI, Chile

Slide Collection Cambridge

Coll. No. 96.29

Notes

**Ecology and Geographical Distribution:** Shrub, found in exposed and barren ridges, where it is abundant. Range: Juan Fernandez endemic; unknown altitudes.

**Pollen morphology:** Pollen, in tetrad arrangement. Form: tricolporate, with 3 apertures. In polar view, shape is tri-lobate: 18-23  $\mu\text{m}$ . In equatorial view, shape is rectangular(broad): 12-16  $\mu\text{m}$ . Total tetrad size is 23-29 $\mu\text{m}$ . Components not found individually. Exine is  $\sim 1.5\mu\text{m}$ , even, psilate. Pores: Indistinct,  $\sim 1.5\mu\text{m}$ , plain. Colpi: 1/2 length,  $\sim 1.5\mu\text{m}$ .



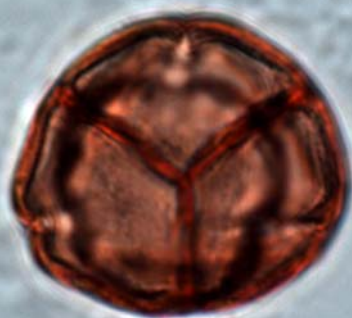
Equatorial view



Polar view



Aperture



Wall structure



Surface



Other features 1



Other features 2



Plant

Flower

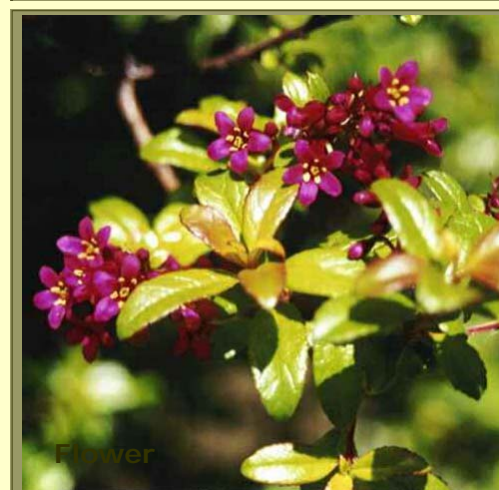
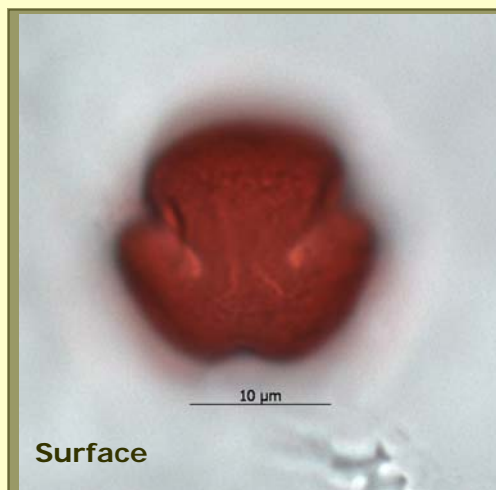
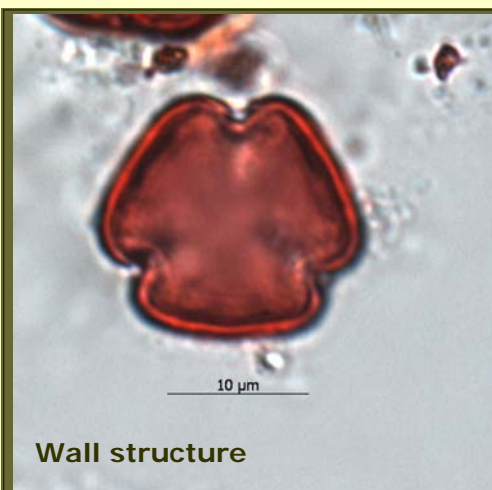
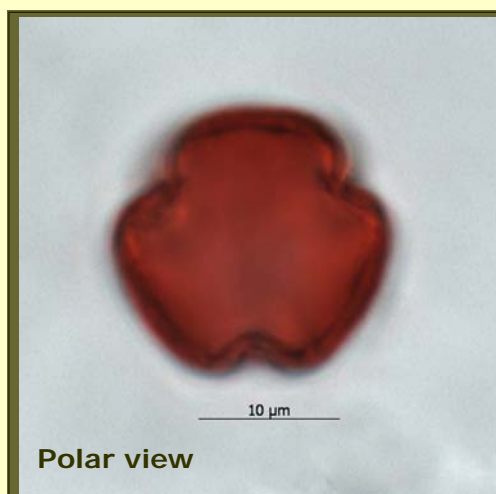


## ESCALLONIACEAE *Escallonia calcottiae* Hook. & Arn.

Collection Location	Region XI, Chile		
Slide Collection	Cambridge	Coll. No.	96.8
Notes	Stained grains - many grains on this slide. Grains slightly different to the 96.26 slide		

**Ecology and Geographical Distribution:** Shrub, found in open and closed forests, as well as exposed barren areas and mountains. Common. Range: Juan Fernandez endemic; above coastal zone.

**Pollen morphology:** Pollen, in monad arrangement. Form: tricolporate, with 3 apertures. In polar view, shape is triangular(straight): 17-20  $\mu\text{m}$ . In equatorial view, shape is circular: 17-20  $\mu\text{m}$ . Exine is  $\sim 1\mu\text{m}$ , even, scabrate. Pores: lolongate, 2-3 $\mu\text{m}$ , sunken pore. Colpi: 1/3 length, 2 $\mu\text{m}$ .



## ESCALLONIACEAE *Escallonia rubra* Bert. ex Steud.

Collection Location Region XI, Chile

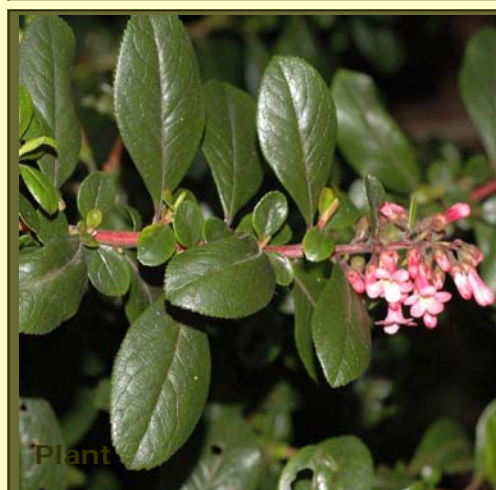
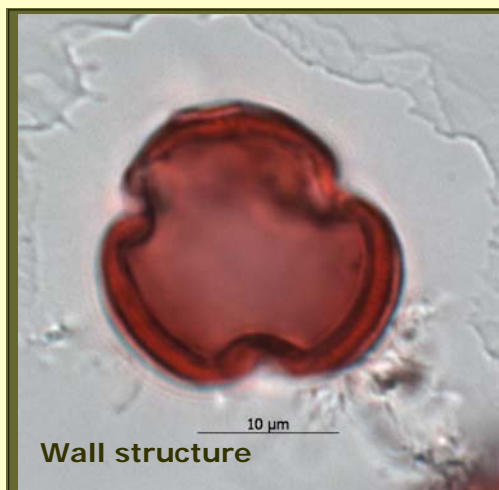
Slide Collection Cambridge

Coll. No. 95.4

Notes

**Ecology and Geographical Distribution:** Shrub, found in wet, exposed or shaded areas. Frost tolerant. Range: South of Region IV, Chile; 2000-4000m.

**Pollen morphology:** Pollen, in monad arrangement. Form: tricolpate tricolporate, with 3 apertures. In polar view, shape is tri-lobate: 17-33  $\mu\text{m}$ . In equatorial view, shape is subprolate: 19-30  $\mu\text{m}$ . Exine is  $\sim 2\text{-}3.5\mu\text{m}$ , even, psilate. Pores: rectangular(tall), 2.5 $\mu\text{m}$ , sunken pore. Colpi: 2/3 length,  $\sim 3\mu\text{m}$ .



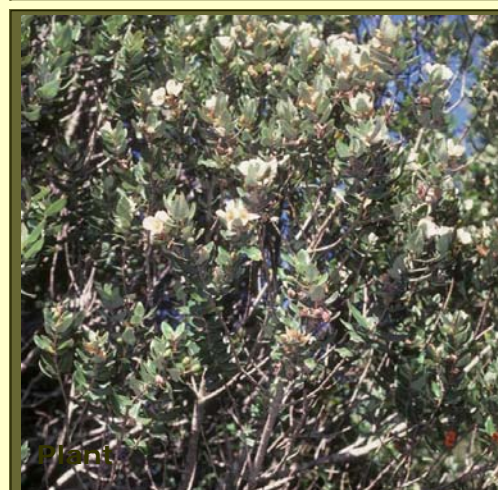
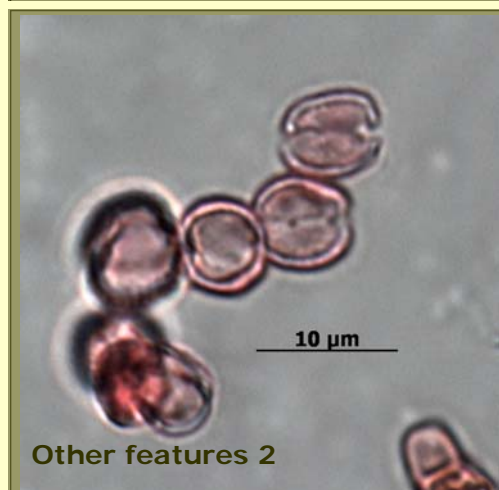
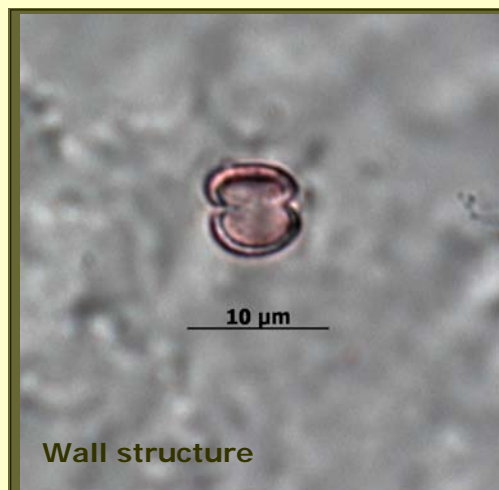


## EUCRYPHIACEAE *Eucryphia cordifolia* Cav.

Collection Location	Region XI, Chile		
Slide Collection	Cambridge	Coll. No.	95.41
Notes			

**Ecology and Geographical Distribution:** Tree, found in humid areas, with full or partial sun, some frost. Range: Regions VIII to X, Chile; coastal mountains and inland to 100m.

**Pollen morphology:** Pollen, in monad arrangement. Form: dicolpate, with 2 apertures. In polar view, shape is elliptic: 6.3-7.8  $\mu\text{m}$ . In equatorial view, shape is circular: 5-6.4  $\mu\text{m}$ . Exine is  $\sim 0.7\mu\text{m}$ , even, scabrate. Pores: N/A,  $-\mu\text{m}$ , . Colpi: full length,  $\sim 0.5\mu\text{m}$ .





## FAGACEAE *Nothofagus antarctica* Oerst.

Collection Location

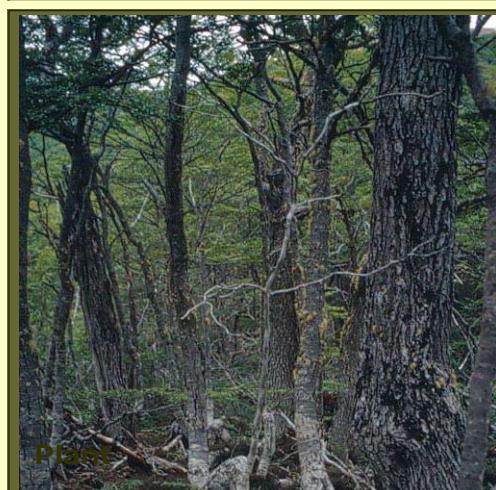
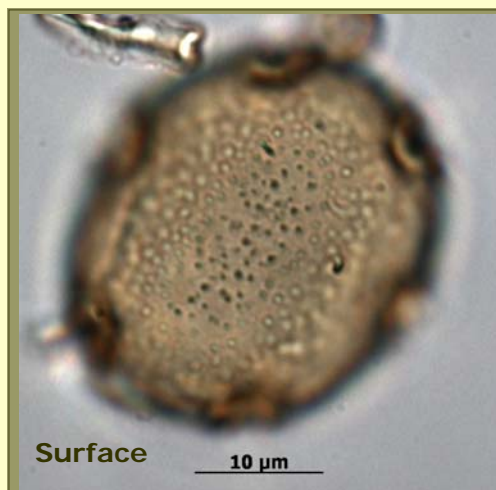
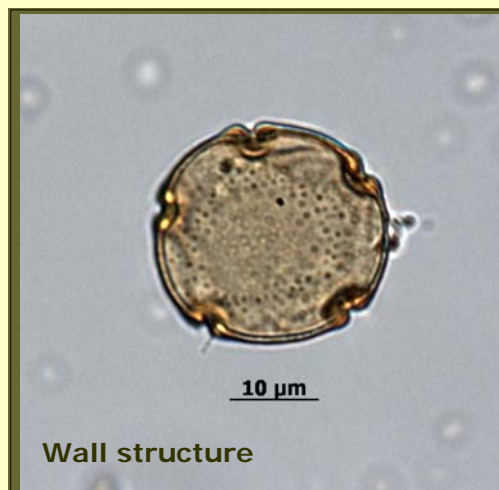
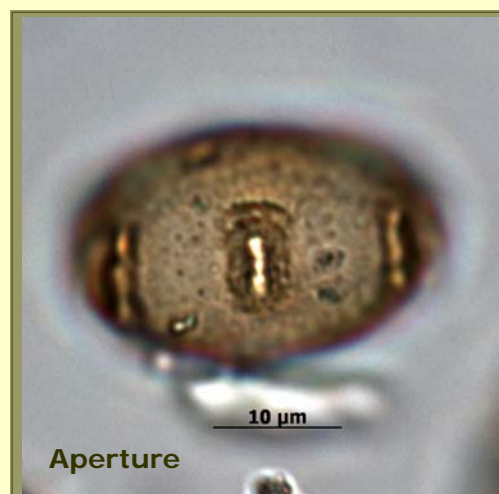
Slide Collection ANU

Coll. No. 959

Notes

**Ecology and Geographical Distribution:** Tree, rarely shrub, found in deciduous forest extending to swampy or dry areas. Range: Chile south of 36°S, Tierra del Fuego; 0-550m.

**Pollen morphology:** Pollen, in monad arrangement. Form: stephanoporate, with 6 or 5 or 7 apertures. In polar view, shape is circular: 24-29  $\mu\text{m}$ . In equatorial view, shape is oblate: 17-19  $\mu\text{m}$ . Exine is  $\sim 0.7$ -1.1  $\mu\text{m}$ , even, perforate. Pores: lolongate, 3.8-5.0  $\mu\text{m}$ , slightly extruded. Colpi: N/A, -  $\mu\text{m}$ .



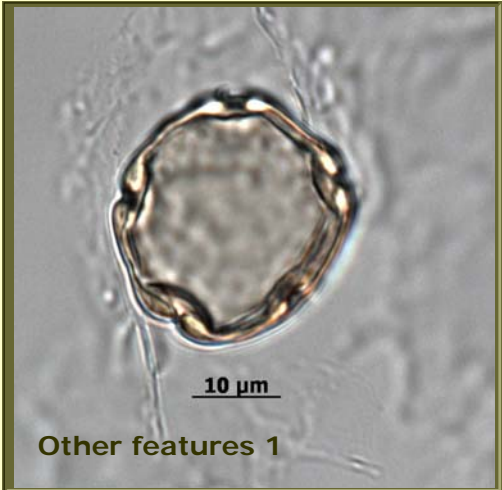
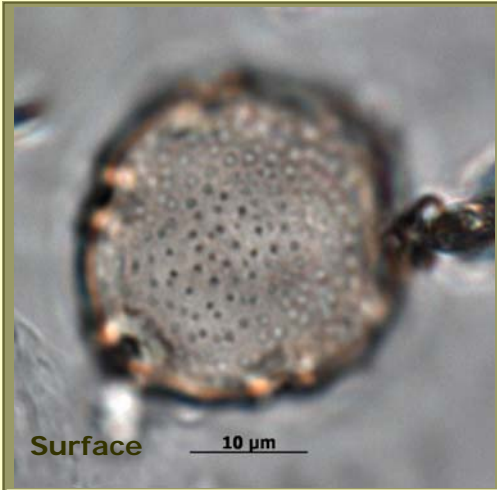
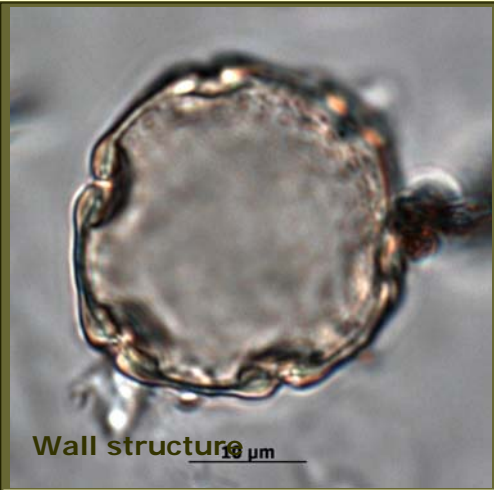
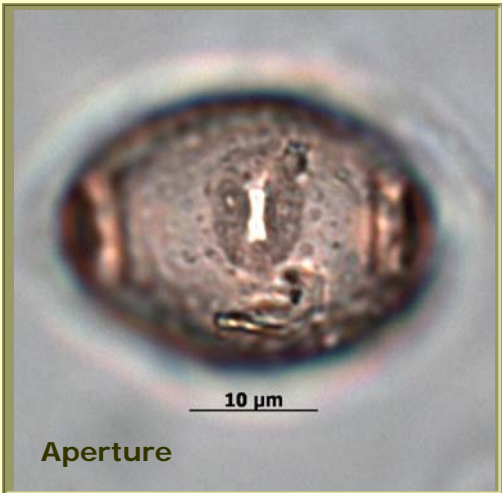
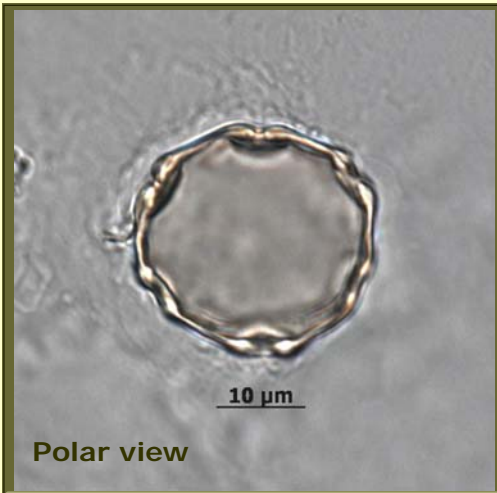


FAGACEAE *Nothofagus betuloides* Blume

Collection Location	Region XI, Chile		
Slide Collection	Cambridge	Coll. No.	90.66
Notes			

**Ecology and Geographical Distribution:** Tree or shrub, found in evergreen forest, better-drained sites in higher rainfall areas. Range: Chile south of 41°S, Tierra del Fuego; 0-500m.

**Pollen morphology:** Pollen, in monad arrangement. Form: stephanoporate, with 6 or 5 apertures. In polar view, shape is circular: 25-33 µm. In equatorial view, shape is oblate: 20-23 µm. Exine is ~0.6-0.9µm, even, perforate. Pores: lolongate, 1.4 x 4.15-5µm, slightly extruded. Colpi: N/A, -µm.



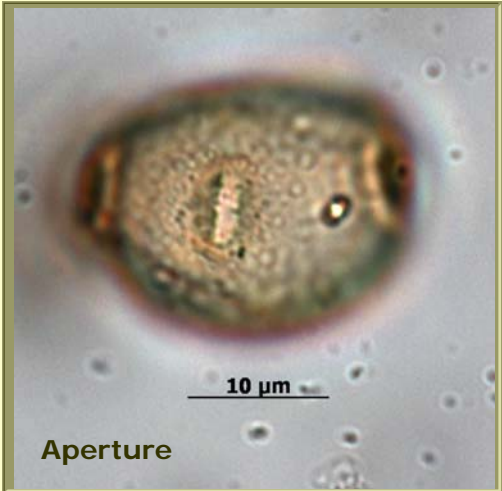
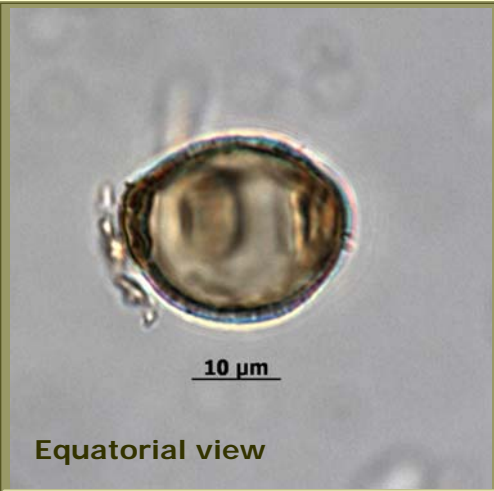


FAGACEAE *Nothofagus dombeyi* (Mirb.) Oerst.

Collection Location			
Slide Collection	ANU	Coll. No.	958
Notes			

**Ecology and Geographical Distribution:** Tree, found in pure forests or component in other forests.. Range: Region VI to Region XI; Sea level to tree line.

**Pollen morphology:** Pollen, in monad arrangement. Form: stephanoporate, with 6 or 5 apertures. In polar view, shape is circular: 25-29  $\mu\text{m}$ . In equatorial view, shape is oblate: 30-32  $\mu\text{m}$ . Exine is  $\sim 0.8\text{-}1.04\mu\text{m}$ , even, perforate. Pores: lolongate, 4.0-5.3 $\mu\text{m}$ , slightly extruded. Colpi: N/A, - $\mu\text{m}$ .





# Chilean Pollen Reference Collection

FAGACEAE *Nothofagus obliqua* (Mirb.) Oerst.

Collection Location

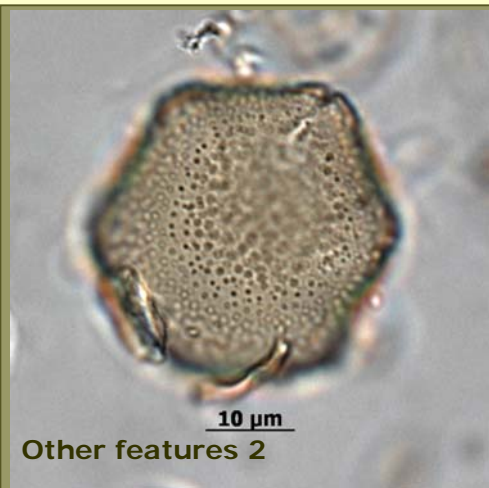
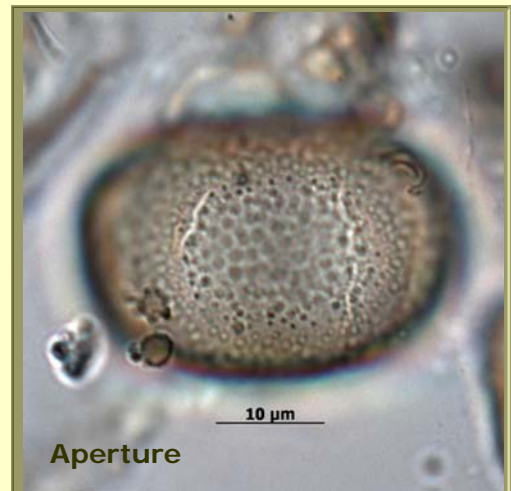
Slide Collection ANU

Coll. No. 956

Notes

**Ecology and Geographical Distribution:** Tree, found in mountain ranges and central valleys. Prefers deep fertile soil and forests. Range: Chile Region V to Region X; unknown altitudes.

**Pollen morphology:** Pollen, in monad arrangement. Form: stephanocolpate, with 6 or 7 apertures. In polar view, shape is quinquangular: 30-35  $\mu\text{m}$ . In equatorial view, shape is oblate: 24-26  $\mu\text{m}$ . Exine is  $\sim 0.7\text{--}1.5\mu\text{m}$ , even, perforate. Pores: N/A,  $-\mu\text{m}$ , . Colpi: 1/3 length,  $<1\mu\text{m}$ .



References for plant photos and ecological descriptions: 5, 9

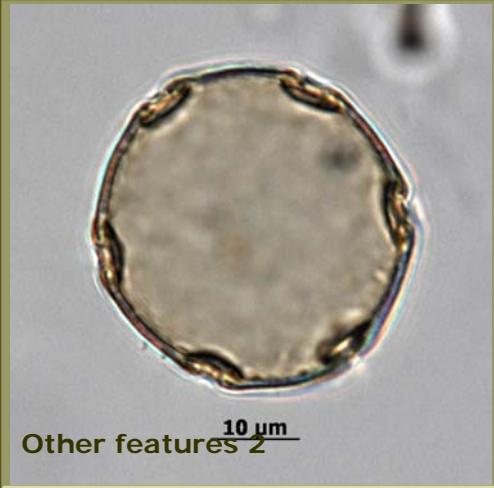


FAGACEAE *Nothofagus pumilio* Krasser

Collection Location			
Slide Collection	ANU	Coll. No.	955
Notes			

**Ecology and Geographical Distribution:** Tree or shrub, found in deciduous forest on well-developed soils with good drainage. Range: Chile south of 41°S, Tierra del Fuego; 0-70m.

**Pollen morphology:** Pollen, in monad arrangement. Form: inaperturate, with 6 or 5 or 7 apertures. In polar view, shape is circular: 31-37  $\mu\text{m}$ . In equatorial view, shape is oblate: 21-25  $\mu\text{m}$ . Exine is  $\sim 1.2\text{-}1.4\mu\text{m}$ , even, perforate. Pores: rectangular(tall),  $4.0\text{-}5.5 \times 2.3\mu\text{m}$ , thickened. Colpi: N/A,  $-\mu\text{m}$ .





## LOGANIACEAE *Desfontainia spinosa* Ruiz & Pav.

Collection Location Region XI, Chile

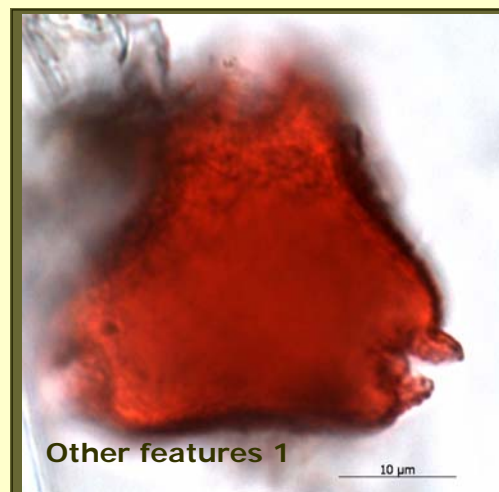
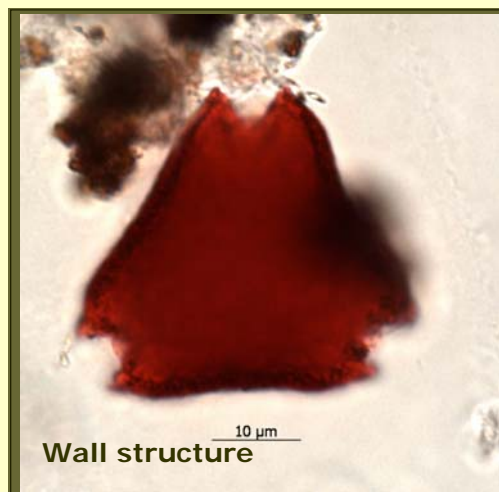
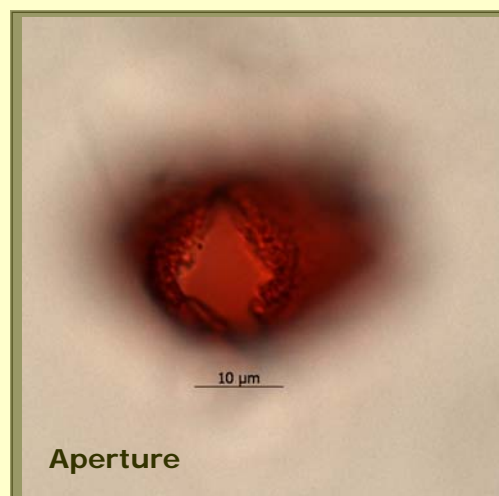
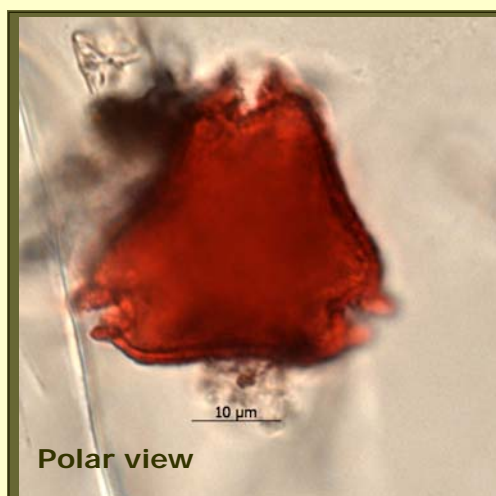
Slide Collection Cambridge

Coll. No. 94.2

Notes

**Ecology and Geographical Distribution:** Evergreen shrub, found in coastal *Drimys-Nothofagus* forest  
Range: Chile south of 40°S, Isla Desolacion and Isla de los Estados (TdF); 0-30m.

**Pollen morphology:** Pollen, in monad arrangement. Form: triporate, with 3 apertures. In polar view, shape is triangular(straight): 20-37  $\mu\text{m}$ . In equatorial view, shape is oblate: 15-25  $\mu\text{m}$ . Exine is  $\sim 1.3$ -2.3 $\mu\text{m}$ , even, scabrate. Pores: rhombic(broad), 3-14 $\mu\text{m}$ , extruded. Colpi: N/A, - $\mu\text{m}$ .



## MYRTACEAE *Luma apiculata* (DC.) Burret

Collection Location Region XI, Chile

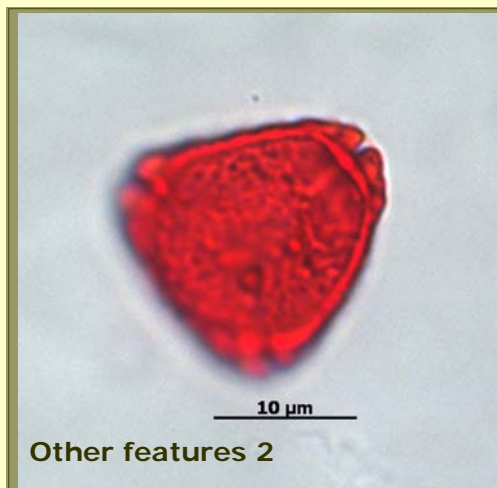
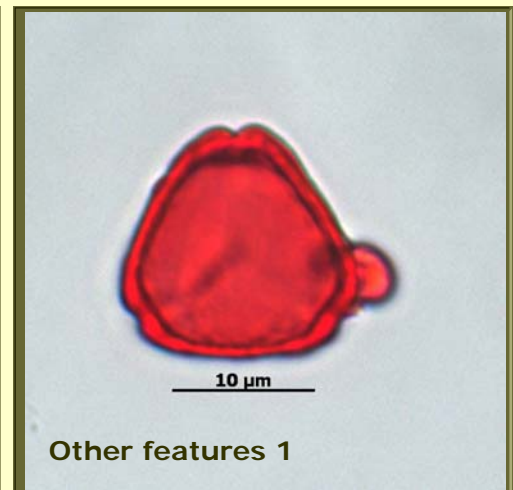
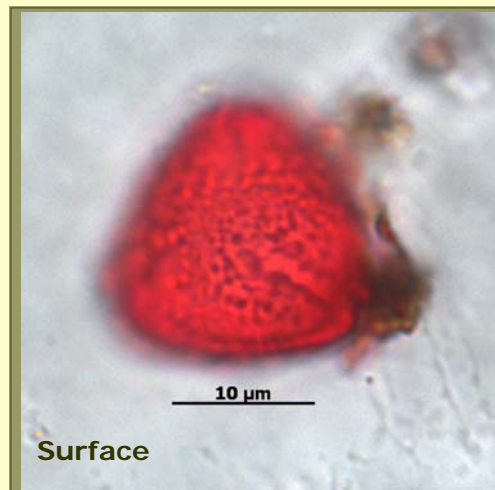
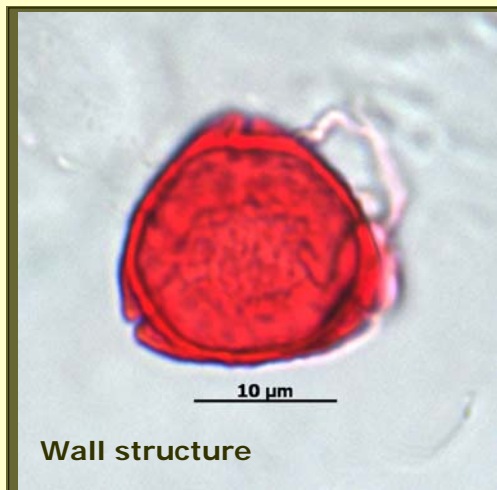
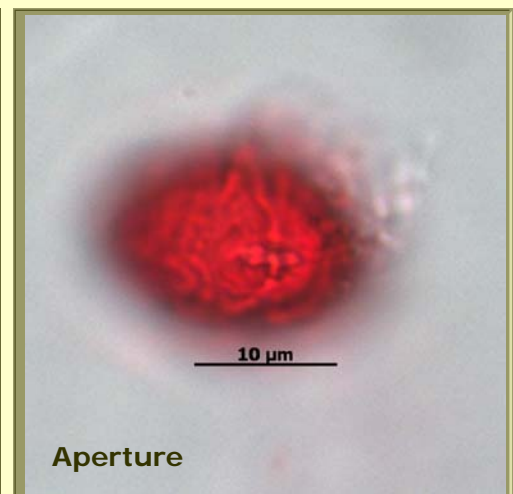
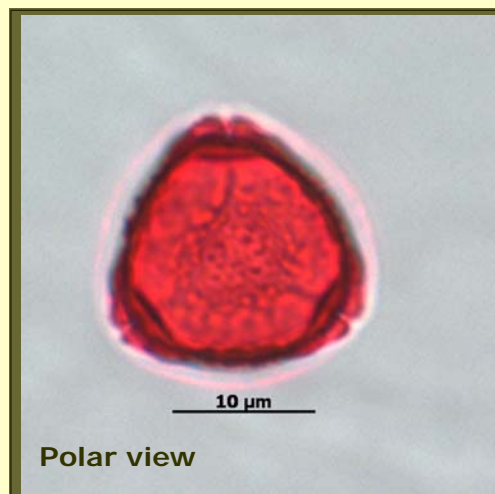
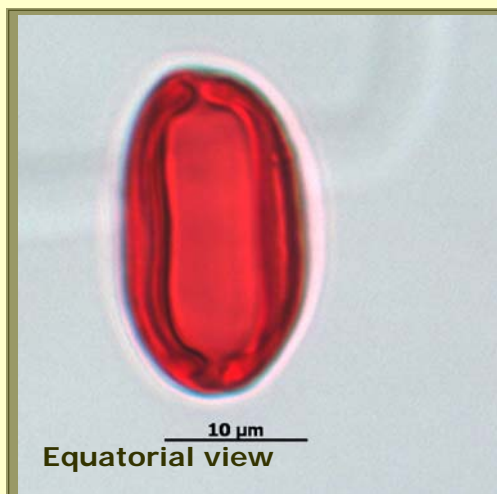
Slide Collection Cambridge

Coll. No.

Notes

**Ecology and Geographical Distribution:** Tree, found in wet areas, inland water sources, shady places, may tolerate some frost. Range: Chile, regions V to XI; inland to 3000m.

**Pollen morphology:** Pollen, in monad arrangement. Form: tricolporate, with 3 apertures. In polar view, shape is triangular(straight): 16-23  $\mu\text{m}$ . In equatorial view, shape is prolate: 10-13  $\mu\text{m}$ . Polar island visible. Exine is  $\sim 0.5\text{-}1\mu\text{m}$ , thicker on pole, scabrate. Pores: rectangular(broad), 3-4 $\mu\text{m}$ , thickened. Colpi: 1/2 length,  $\sim 1\mu\text{m}$ .





# Chilean Pollen Reference Collection

## MYRTACEAE *Myrceugenia planipes* O.Berg

Collection Location Region XI, Chile

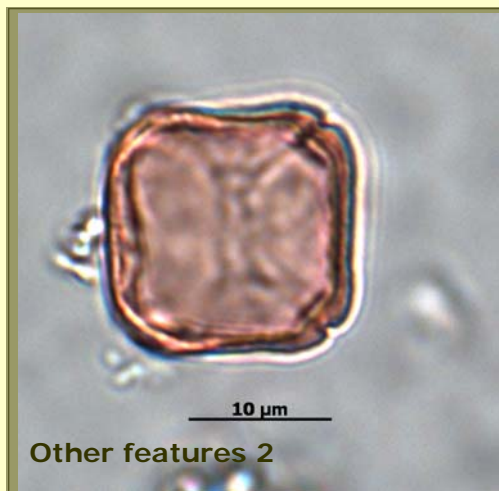
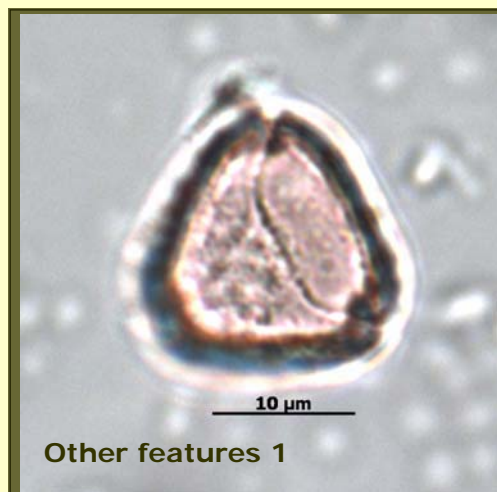
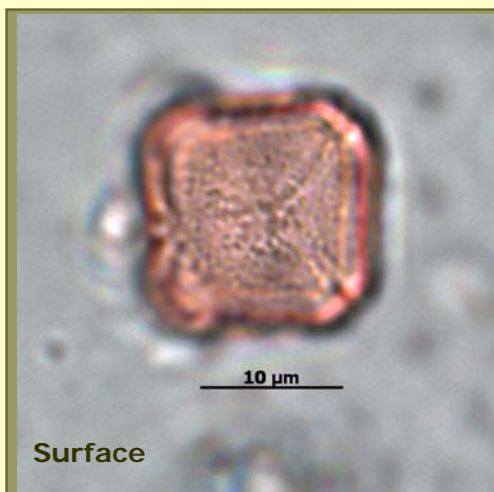
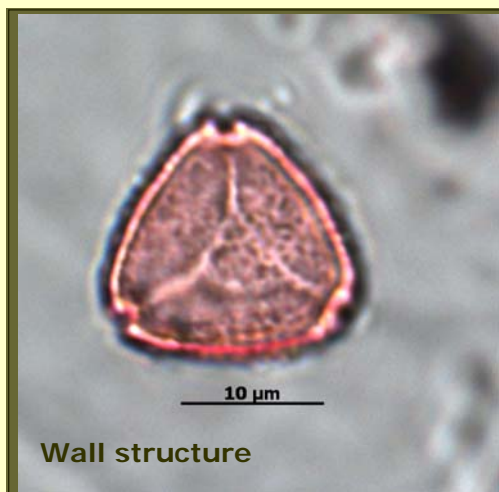
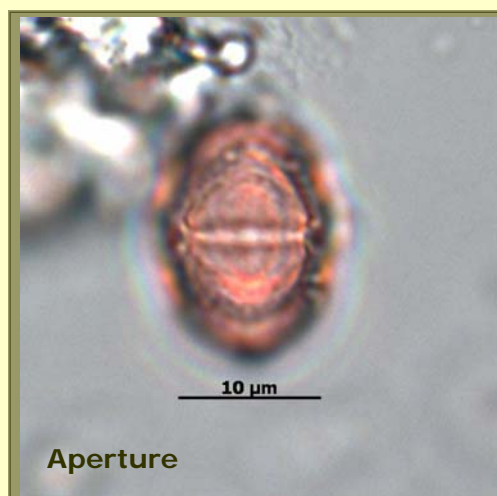
Slide Collection Cambridge

Coll. No. 90.74

Notes

**Ecology and Geographical Distribution:** Tree, found in forests. Range: Regions VIII to XI; 400-700m.

**Pollen morphology:** Pollen, in monad arrangement. Form: tricolpate, with 3 or 4 apertures. In polar view, shape is triangular(convex): 16-21  $\mu\text{m}$ . In equatorial view, shape is oblate: 10-12  $\mu\text{m}$ . Sides may be straight as well as convex. Polar triangle is obvious and  $\sim 6$ -7 microns wide. Exine is  $\sim 0.8$ -1.2  $\mu\text{m}$ , thicker on pole, scabrate. Pores: circular, 1.1-1.3  $\mu\text{m}$ , thickened. Colpi: 1/2 length,  $\sim 1$   $\mu\text{m}$ .



References for plant photos and ecological descriptions: 9, 14



## MYRTACEAE *Myrteola nummularia* O. Berg

Collection Location Region XI, Chile

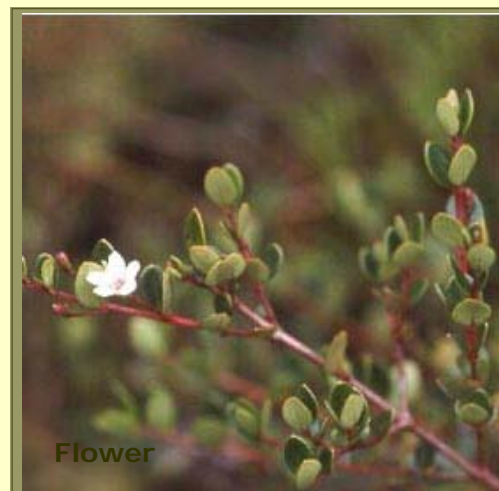
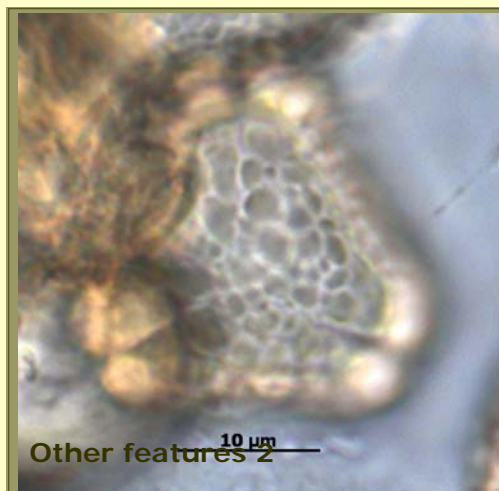
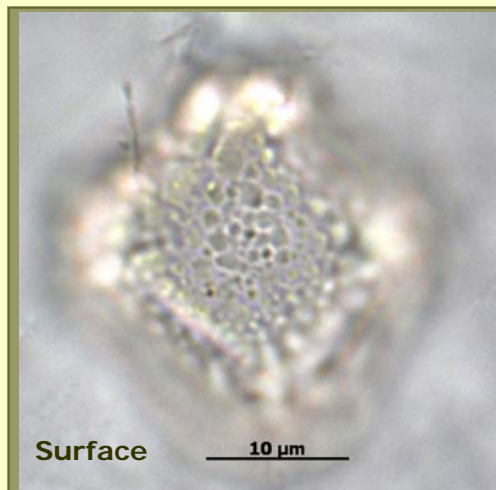
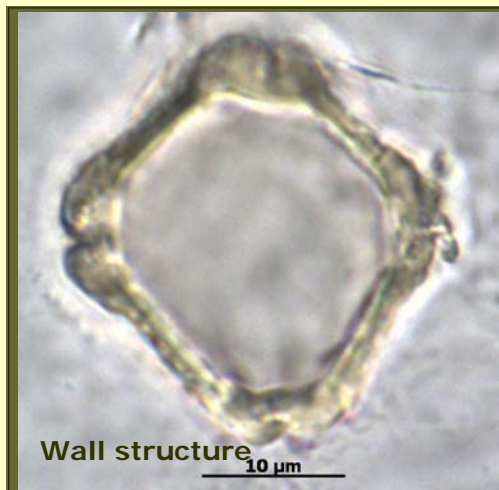
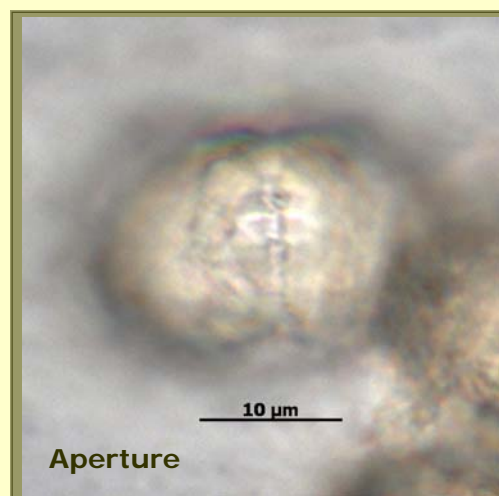
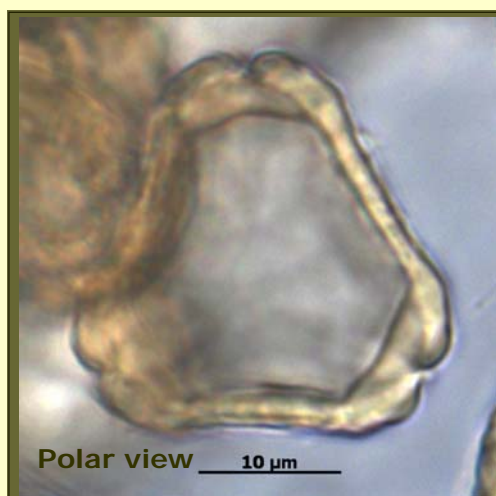
Slide Collection Cambridge

Coll. No. 95.21

Notes

**Ecology and Geographical Distribution:** Dwarf shrub, found in raised parts of bogs, especially with *Sphagnum*, wet *Empetrum*, *Pernettya* and *Nothofagus* scrub. Range: Chile south of 39°S, Tierra del Fuego, Falkland Islands; 0-625m.

**Pollen morphology:** Pollen, in monad arrangement. Form: tricolporate, with 3 or 4 apertures. In polar view, shape is triangular(straight): 21-28  $\mu\text{m}$ . In equatorial view, shape is oblate: 21-28  $\mu\text{m}$ . Polar island is visible. Exine is  $\sim 1\text{-}2\mu\text{m}$ , thicker on pole, verrucate. Pores: elliptic(broad), 2-4 $\mu\text{m}$ , thickened. Colpi: 1/2 length, 1 $\mu\text{m}$ .





## MYRTACEAE *Tepualia stipularis* Griseb.

Collection Location Region XI, Chile

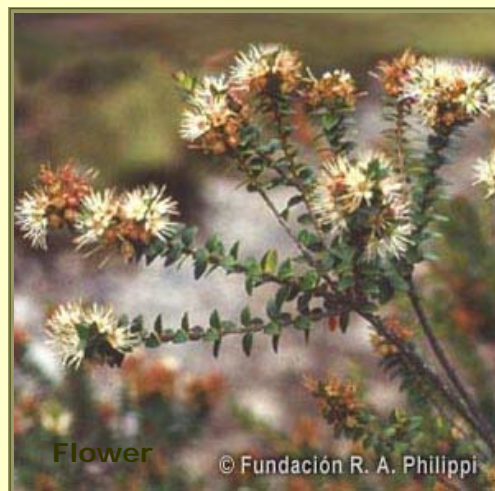
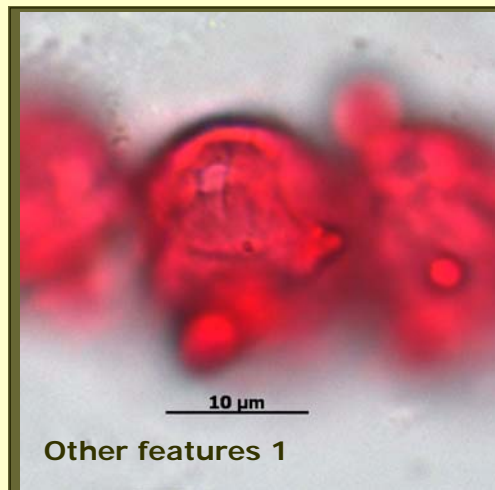
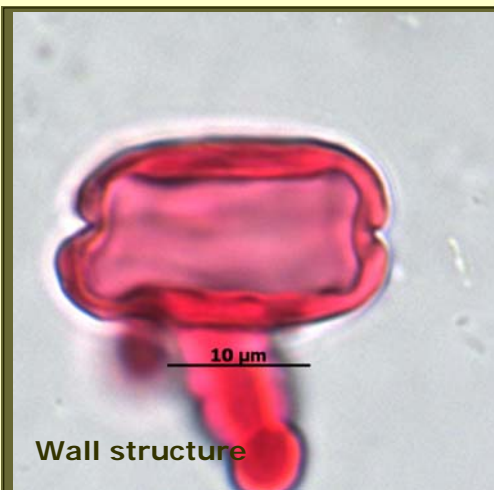
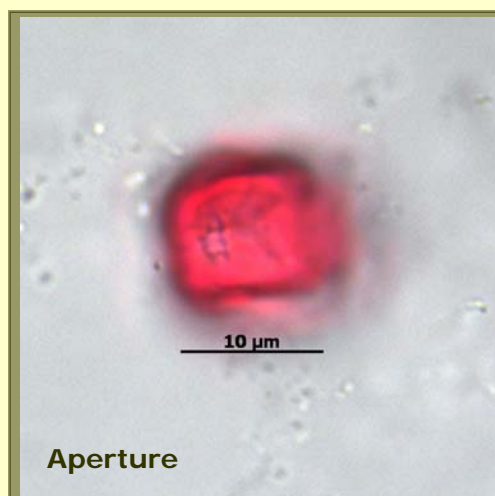
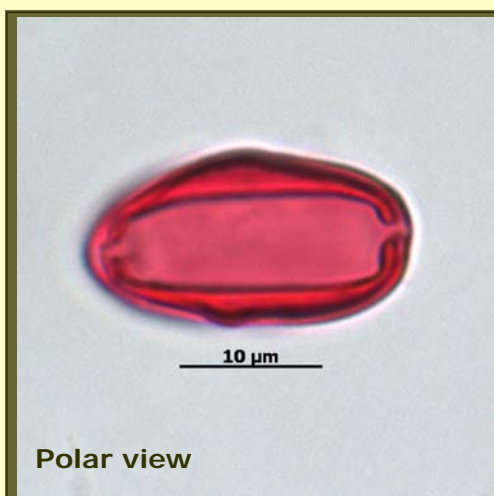
Slide Collection Cambridge

Coll. No. 121.\*

Notes Grains on this slide appear to be immature.

**Ecology and Geographical Distribution:** Erect shrub, found in margin and clearings of mixed *Drimys-Nothofagus* forest, among rocks in moorlands. Range: Chile south of 35°S, Tierra del Fuego; .

**Pollen morphology:** Pollen, in monad arrangement. Form: dicolporate, with 2 apertures. In polar view, shape is elliptic: 20-25  $\mu\text{m}$ . In equatorial view, shape is circular: 10-12  $\mu\text{m}$ . Exine is  $\sim 1\text{-}3\mu\text{m}$ , even, psilate. Pores: squared, 1-2 $\mu\text{m}$ , plain. Colpi:  $<1/3$  length,  $<1\mu\text{m}$ .



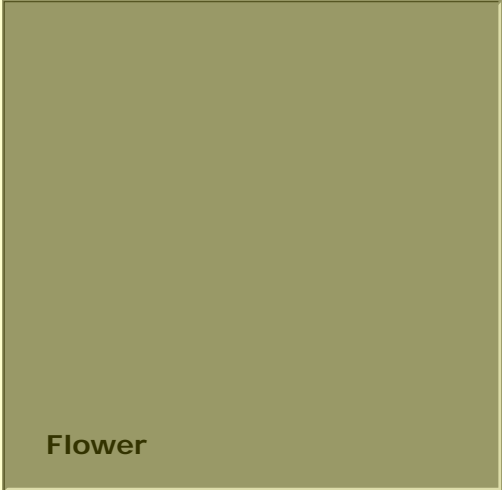
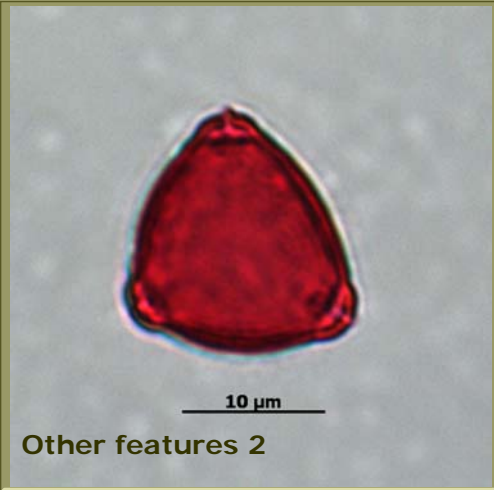
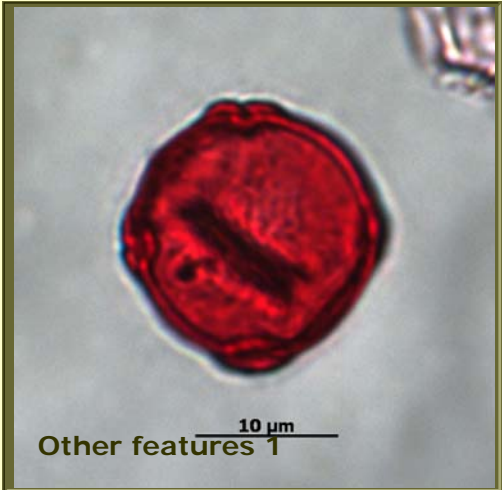
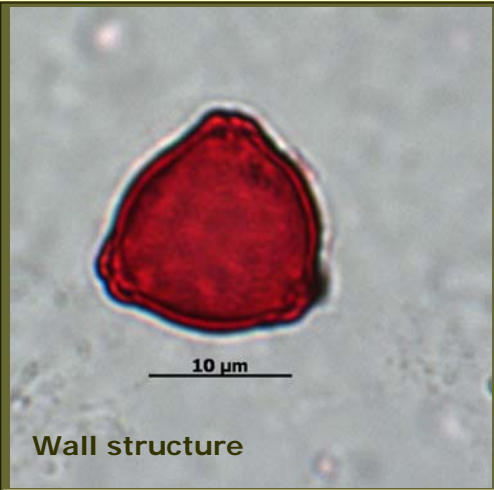
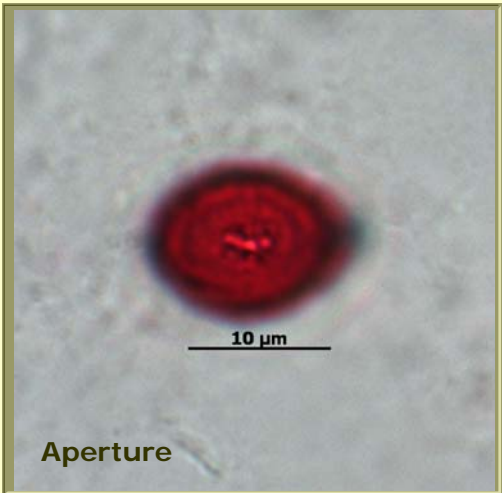
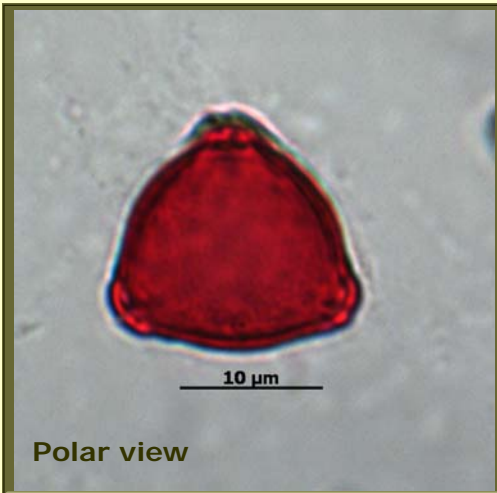
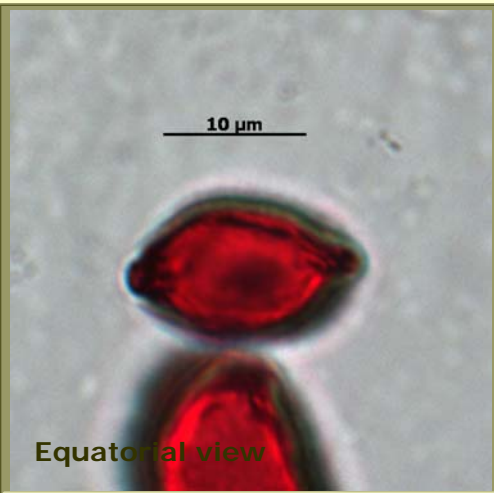
© Fundación R. A. Philippi

MYRTACEAE *Ugni Selkirkii* O. Berg

Collection Location	Region XI, Chile		
Slide Collection	Cambridge	Coll. No.	96.27
Notes			

**Ecology and Geographical Distribution:** Shrub, found in higher areas, out-competed by *U. molinae*. Range: Endemic to Juan Fernandez; 0-500m.

**Pollen morphology:** Pollen, in monad arrangement. Form: tricolporate, with 3 or 4 apertures. In polar view, shape is triangular(convex): 13-19  $\mu$ m. In equatorial view, shape is suboblate: 9-12  $\mu$ m. Exine is ~0.6-0.9 $\mu$ m, even, scabrate. Pores: rectangular(broad), 0.6-1.8 $\mu$ m, extruded. Colpi: <1/3 length, <1 $\mu$ m.





# Chilean Pollen Reference Collection

PHILESIACEAE *Luzuriaga marginata* Benth. & Hook.f.

Collection Location Region XI, Chile

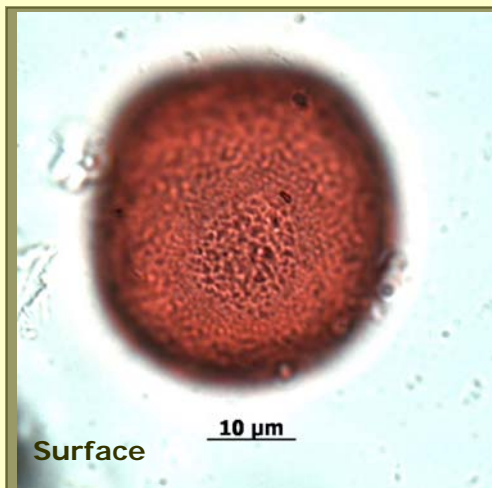
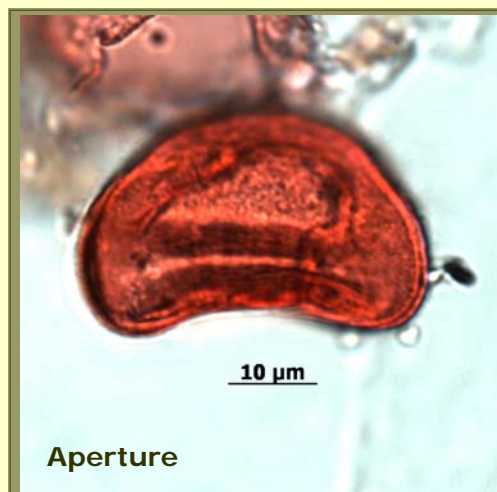
Slide Collection Cambridge

Coll. No. 90.87

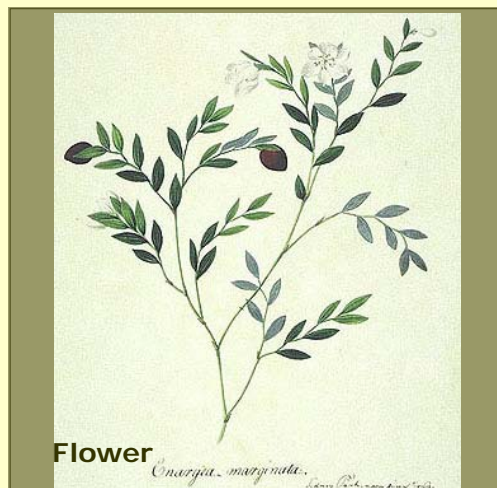
Notes

**Ecology and Geographical Distribution:** Perennial herb, found in forest floor, wet grassland and scrub, moist rock-crevices and stream-sides. Range: Chile south of 50°S, Tierra del Fuego, Falkland Islands; 0 -400m.

**Pollen morphology:** Pollen, in monad arrangement. Form: monocolpate(monosulcate), with 1 apertures. In polar view, shape is elliptic: 30-40  $\mu\text{m}$ . In equatorial view, shape is suboblate: 25-35  $\mu\text{m}$ . Grain has irregular shape, sulcus can appear ragged and split. Exine is  $\sim 1.8\mu\text{m}$ , even, scabrate. Pores: N/A,  $-\mu\text{m}$ , . Colpi: 1/2 length,  $1.5\mu\text{m}$ .



Other features 2



References for plant photos and ecological descriptions: 1, 4, 26

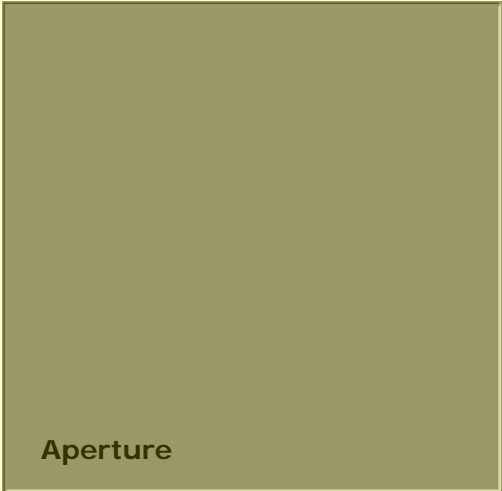


PHILESIACEAE *Philesia magellanica* J.F.Gmel.

Collection Location	Region XI, Chile		
Slide Collection	Cambridge	Coll. No.	94.21
Notes			

**Ecology and Geographical Distribution:** Evergreen shrub, found in *Drimys*, *Nothofagus* and *Pilgerodendron* forest. Range: Chile south of 42°S, Tierra del Fuego; 0-100m.

**Pollen morphology:** Pollen, in monad arrangement. Form: inaperturate, with 0 apertures. In polar view, shape is circular: 48-65 µm. In equatorial view, shape is circular: 48-65 µm. Shape not distinctive, irregular to sub-spherical. Exine is ~<1µm, even, echinate. Pores: N/A, -µm, . Colpi: N/A, -µm.





Chilean Pollen Reference Collection

PODOCARPACEAE *Lepidothamnus fonki* Phill.

Collection Location	Region XI, Chile		
Slide Collection	Cambridge	Coll. No.	90.7
Notes			

**Ecology and Geographical Distribution:** Evergreen shrub, found in Magellanic moorlands, bogs. Range: Chile south of 40oS, Isla Hoste (TdF); 2-20m.

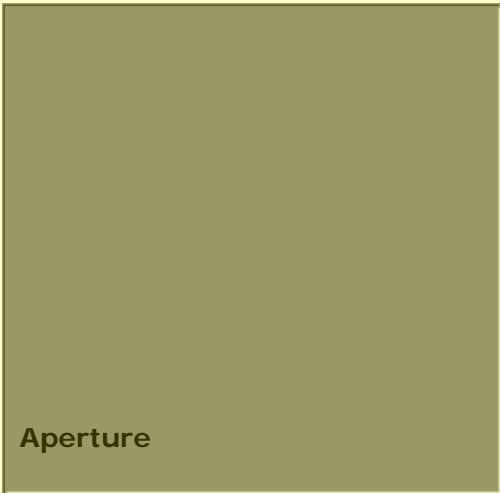
**Pollen morphology:** Pollen, in monad arrangement. Form: saccate, with 0 apertures. In polar view, shape is elliptic: 56-78 µm. In equatorial view, shape is saccate; corpus: 30-50 µm. Saccus width 28-40µm. Exine is ~2.6-3µm, even, psilate with reticulate sacchi. Pores: N/A, -µm, . Colpi: N/A, -µm.



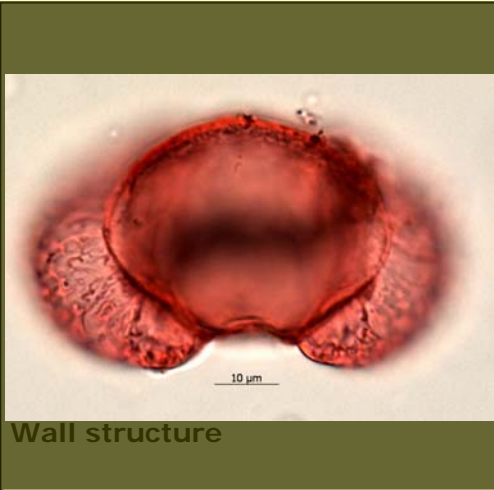
Equatorial view



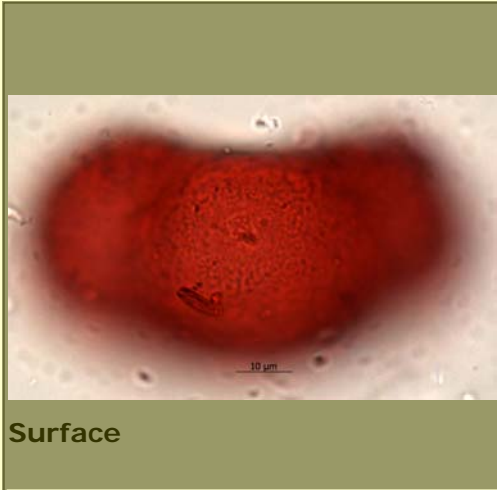
Polar view



Aperture



Wall structure



Surface



Other features 1



Other features 2



Plant



Flower

References for plant photos and ecological descriptions: 1, 14



## PODOCARPACEAE *Podocarpus nubigena* Lindl.

Collection Location Region XI, Chile

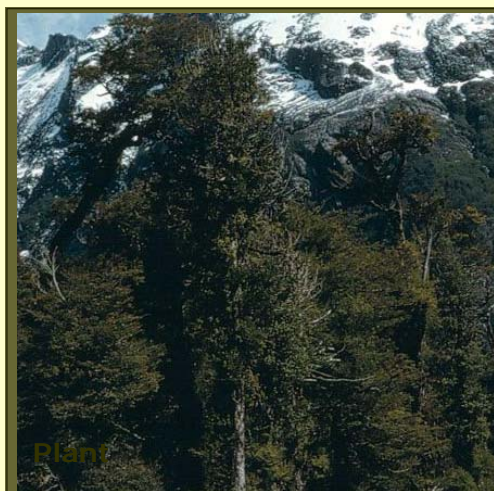
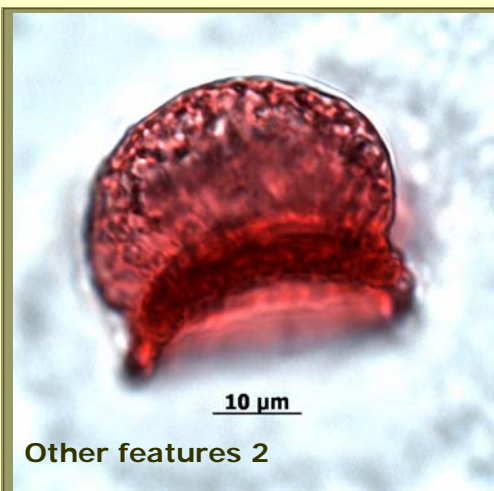
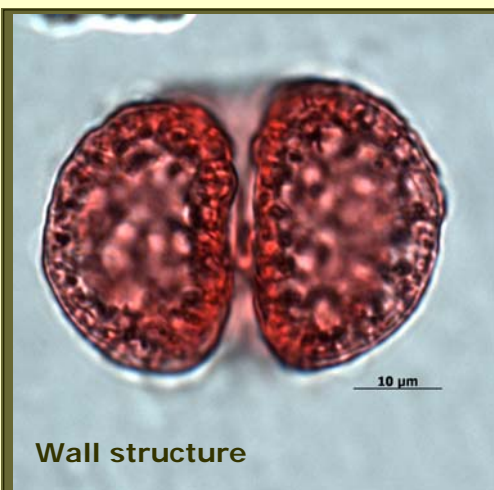
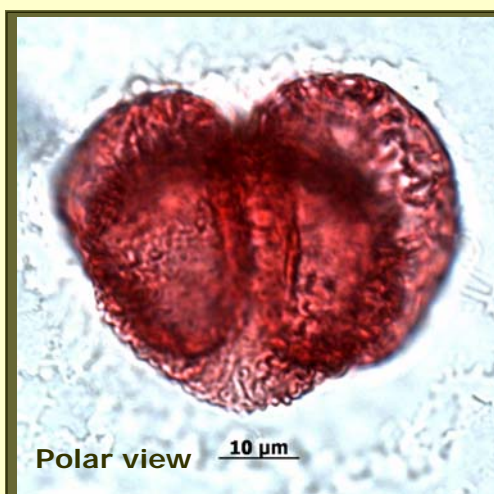
Slide Collection Cambridge

Coll. No. 95.26

Notes

**Ecology and Geographical Distribution:** Tree, found in humid and marshy areas; forests. Range: Aisen, Los Lagos, Magallanes; higher altitudes.

**Pollen morphology:** Pollen, in monad arrangement. Form: saccate, with 0 apertures. In polar view, shape is elliptic: 41-65  $\mu\text{m}$ . In equatorial view, shape is saccate; corpus: 36-50  $\mu\text{m}$ . Saccus width 22-50  $\mu\text{m}$ . Exine is ~1.5-3  $\mu\text{m}$ , even, folded/bunched with reticulate sacchi. Pores: N/A, -  $\mu\text{m}$ , . Colpi: N/A, -  $\mu\text{m}$ .



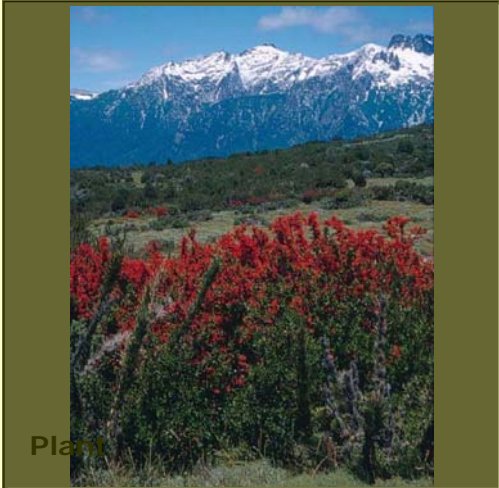
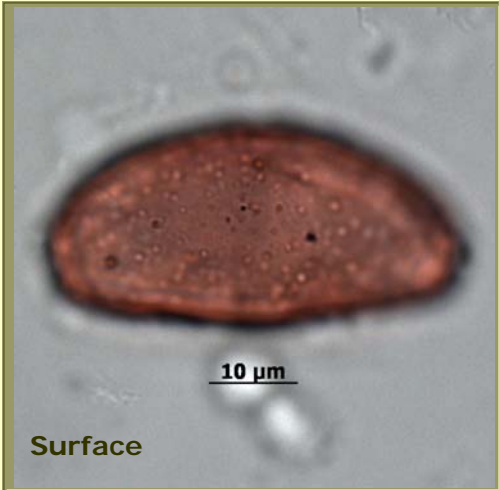
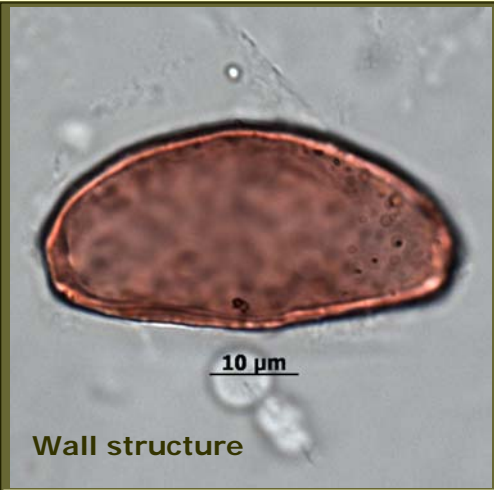
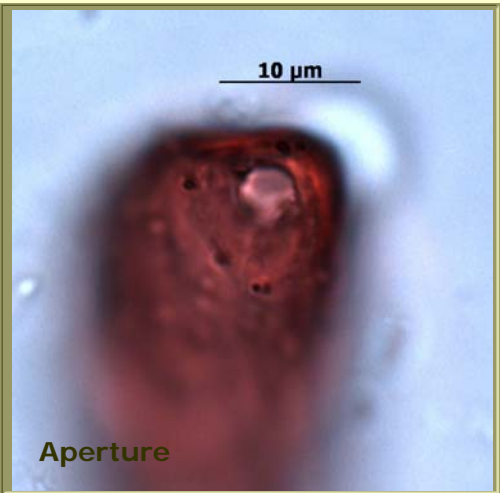
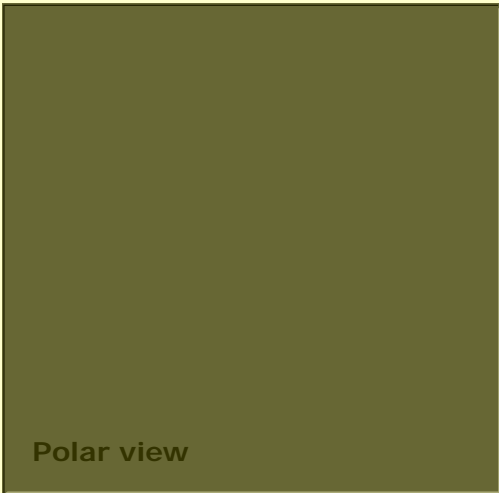


PROTEACEAE *Embothrium coccineum* Forst.

Collection Location	Region XI, Chile		
Slide Collection	Cambridge	Coll. No.	91.17
Notes			

**Ecology and Geographical Distribution:** Shrub or tree, found in forest margins and clearings, on better drained sites in bogs, in *Chiliotrichum*, *Pernettya* and *Berberis* scrub. Range: Chile south of 35°S, Tierra del Fuego; 0-150m.

**Pollen morphology:** Pollen, in monad arrangement. Form: diporate, with 2 apertures. In polar view, shape is elliptic: 45-50 µm. In equatorial view, shape is circular: 22-27 µm. Exine is ~1.5-1.75µm, even, baculate. Pores: circular, 4.6-6.9µm, plain. Colpi: N/A, -µm.





## PROTEACEAE *Gevuina avellana* Molina

Collection Location Region XI, Chile

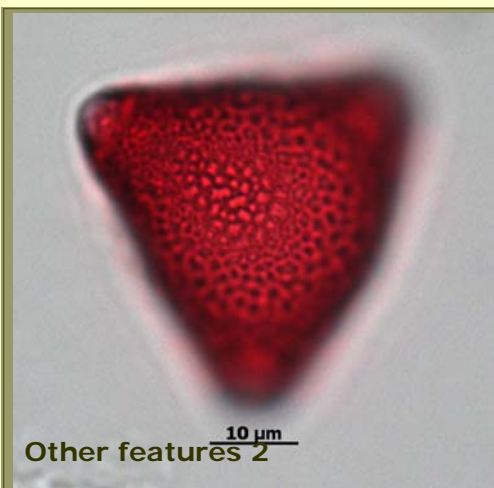
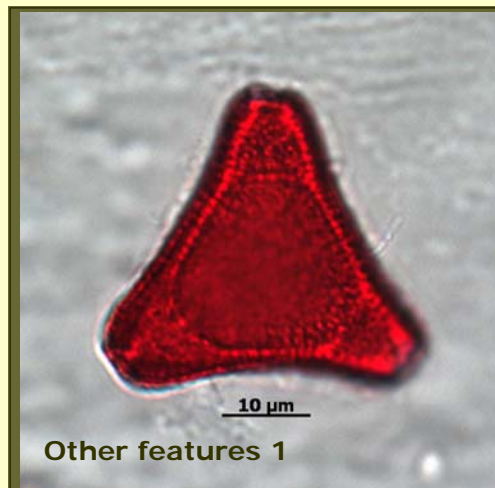
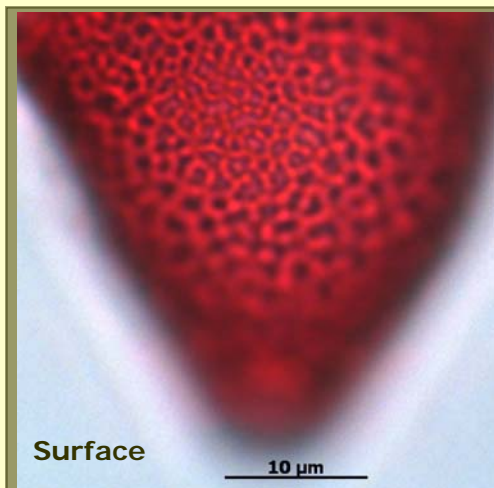
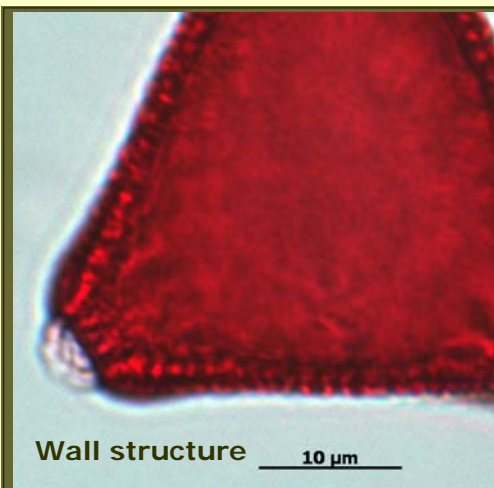
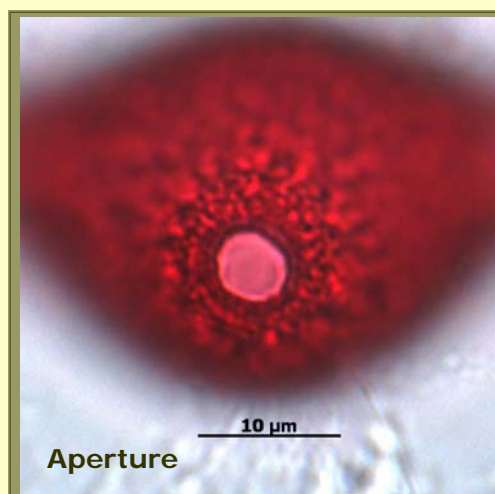
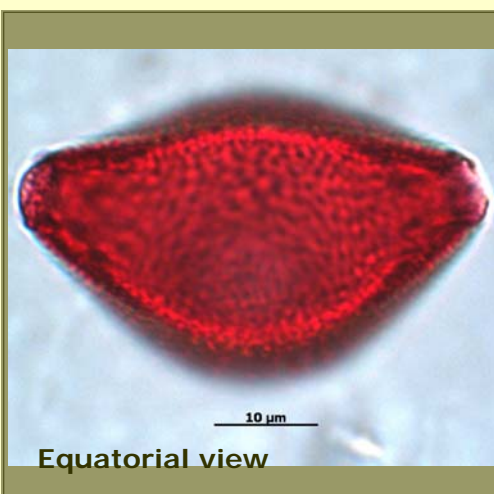
Slide Collection Cambridge

Coll. No. 96.2

Notes

**Ecology and Geographical Distribution:** Tree, found in humid areas, prefers constant rainfall and shady areas; can handle some snow . Range: Region IV to XII; Coastal to treeline.

**Pollen morphology:** Pollen, in monad arrangement. Form: triporate, with 3 apertures. In polar view, shape is triangular(concave): 30-40  $\mu\text{m}$ . In equatorial view, shape is oblate: 16-20  $\mu\text{m}$ . Exine is  $\sim 2$ -2.8 $\mu\text{m}$ , even, reticulate. Pores: circular, 3-5 $\mu\text{m}$ , plain. Colpi: N/A,  $\mu\text{m}$ .





## PROTEACEAE *Lomatia ferruginea* (Cav.) R.Br.

Collection Location Region XI, Chile

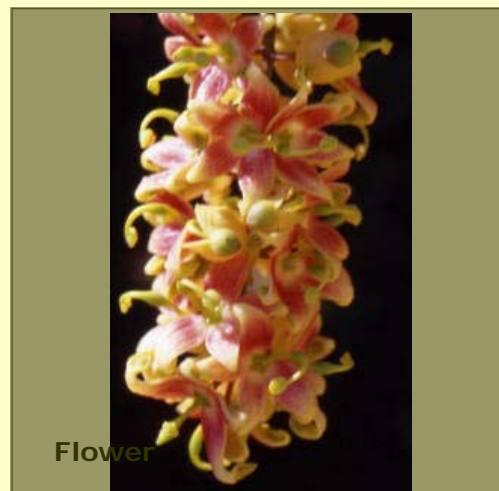
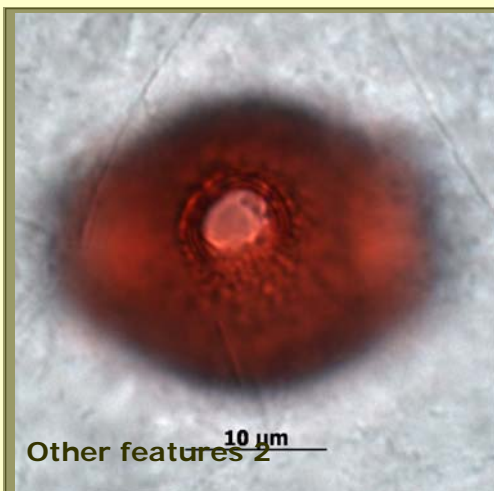
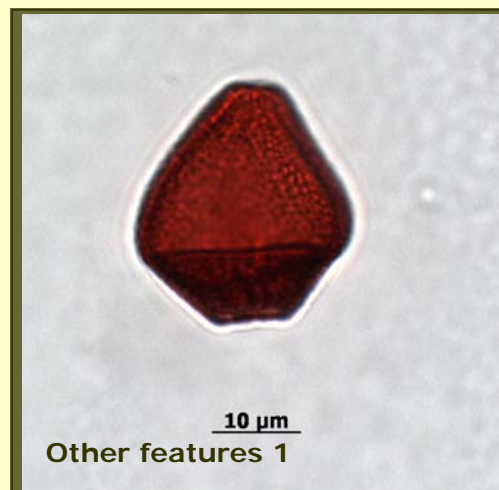
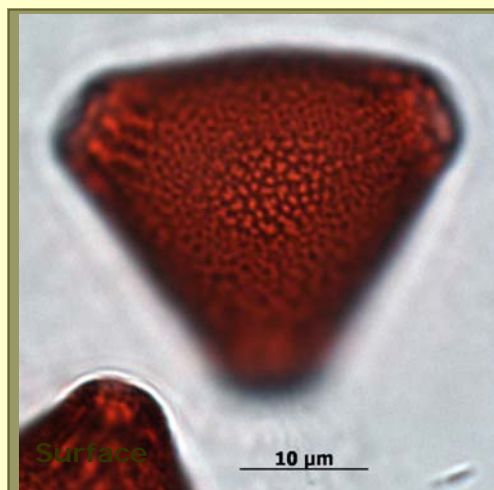
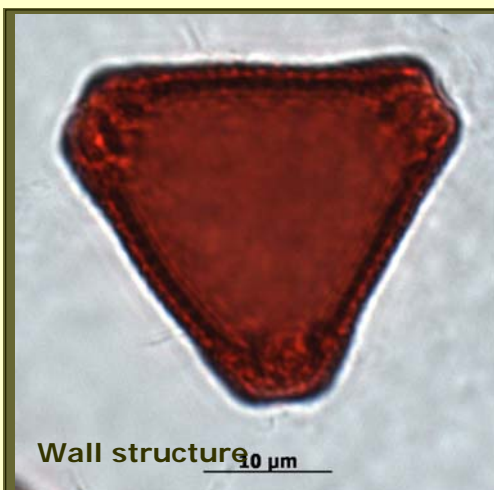
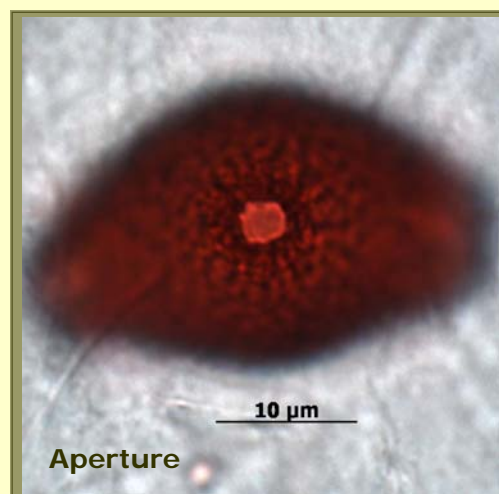
Slide Collection Cambridge

Coll. No. 95.54

Notes

**Ecology and Geographical Distribution:** Tree, found in deep soil, humid forested areas and also very wet soils. Range: South of region VI; Coastal to 100m.

**Pollen morphology:** Pollen, in monad arrangement. Form: triporate, with 3 apertures. In polar view, shape is triangular(straight): 24-28  $\mu\text{m}$ . In equatorial view, shape is prolate: 18-33  $\mu\text{m}$ . Exine is  $\sim 1.7\mu\text{m}$ , even, reticulate. Pores: circular, 3-4.5 $\mu\text{m}$ , plain. Colpi: N/A, - $\mu\text{m}$ .





## ROSACEAE *Geum magellanicum* Pers.

Collection Location Region XI, Chile

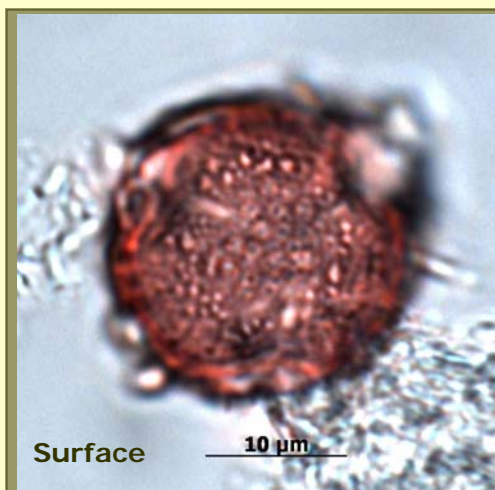
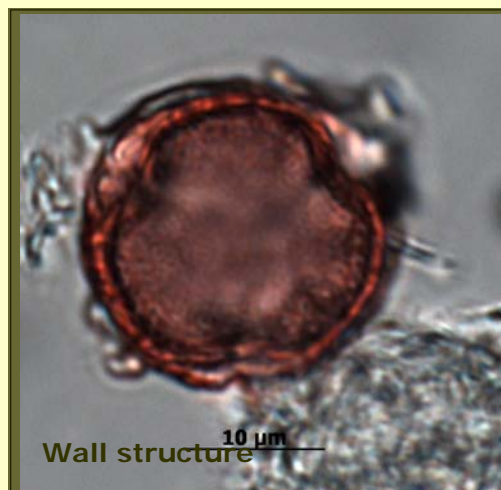
Slide Collection Cambridge

Coll. No. 90.82

Notes Both flower colours possible.

**Ecology and Geographical Distribution:** Herb, found in open or shady areas, prefers humid to very wet places. Range: South of Region V, Chile; Coastal mountains and inland areas to 4000m.

**Pollen morphology:** Pollen, in monad arrangement. Form: tricolporate, with 3 apertures. In polar view, shape is circular: 18-20  $\mu\text{m}$ . In equatorial view, shape is prolate: 23-29  $\mu\text{m}$ . Pores difficult to see. Exine is  $\sim 1.7\mu\text{m}$ , thinner on pole, scabrate. Pores: circular, 2 $\mu\text{m}$ , plain. Colpi: 2/3 length, 2 $\mu\text{m}$ .



References for plant photos and ecological descriptions: 17, 12

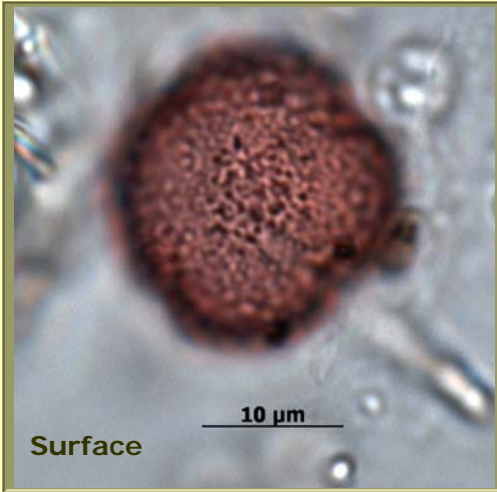
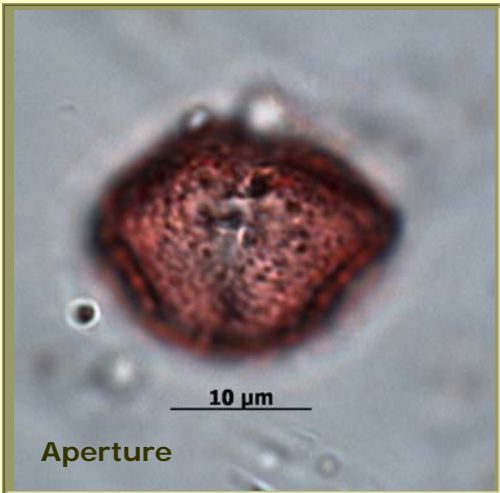


ROSACEAE *Geum parviflorum* Sm.

Collection Location	Region XI, Chile		
Slide Collection	Cambridge	Coll. No.	95.32
Notes	See also <i>G. parviflorum</i> from ANU collection		

**Ecology and Geographical Distribution:** Herb, found in moist montane forests and scrub of *Nothofagus pumilio* and *N. antarctica*, extending above timberline in Bolax communities. Range: Chile south of 46°S, also New Zealand; 200-900m.

**Pollen morphology:** Pollen, in monad arrangement. Form: 4-colporate, with 4 or 5 apertures. In polar view, shape is circular: 21-25 µm. In equatorial view, shape is rhombic(broad): 20-22 µm. Exine is ~1.8µm, even, reticulate. Pores: circular, 1.5µm, plain. Colpi: 1/2 length, 1.5µm.



## ROSACEAE *Geum parviflorum* Sm.

Collection Location Canterbury, NZ

Slide Collection ANU

Coll. No. 127-17-2a

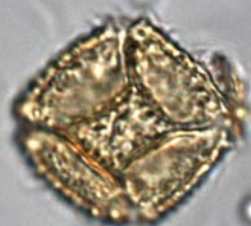
Notes This species also grows in Chile

**Ecology and Geographical Distribution:** Herb, found in moist montane forests and scrub of *Nothofagus pumilio* and *N. antarctica*, extending above timberline in Bolax communities. Range: Chile south of 46°S, also New Zealand; 200-900m.

**Pollen morphology:** Pollen, in monad arrangement. Form: 4-colporate, with 4 or 5 apertures. In polar view, shape is circular: 21-24  $\mu\text{m}$ . In equatorial view, shape is suboblate: 20-22  $\mu\text{m}$ . Exine is  $\sim 1.8\mu\text{m}$ , even, reticulate. Pores: circular, 1.5 $\mu\text{m}$ , plain. Colpi: 1/2 length, 1.5 $\mu\text{m}$ .



Equatorial view



Polar view



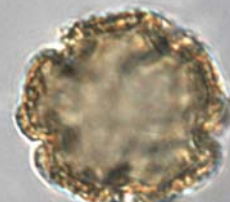
Aperture



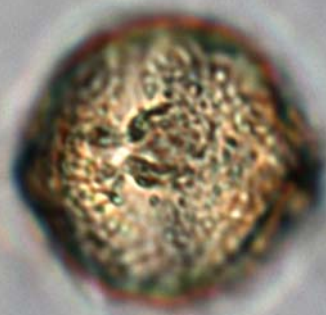
Wall structure



Surface



Other features 1



Other features 2

Plant





# Chilean Pollen Reference Collection

SCROPHULARIACEAE *Ourisia caespitosa* var. *gracilis* Hook.f.

Collection Location New Zealand

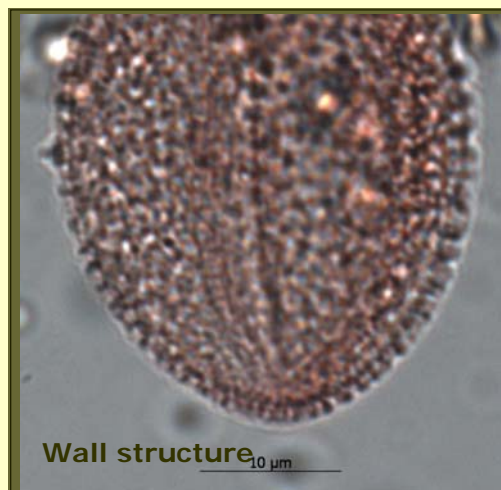
Slide Collection ANU

Coll. No. 262-16-4

Notes Not a Chilean species but included because no example of *O. breviflora*.

**Ecology and Geographical Distribution:** Herb, found in creeping habit, mountain areas. Range: NOT CHILEAN. New Zealand endemic; alpine.

**Pollen morphology:** Pollen, in monad arrangement. Form: tricolpate, with 3 apertures. In polar view, shape is tri-lobate: 29-34  $\mu\text{m}$ . In equatorial view, shape is subprolate: 29-41  $\mu\text{m}$ . Exine is  $\sim 1.8\mu\text{m}$ , even, reticulate. Pores: N/A,  $-\mu\text{m}$ , . Colpi: full length, 1-2 $\mu\text{m}$ .



References for plant photos and ecological descriptions: 21



## STYLIDIACEAE *Donatia fascicularis* Forst.

Collection Location Region XI, Chile

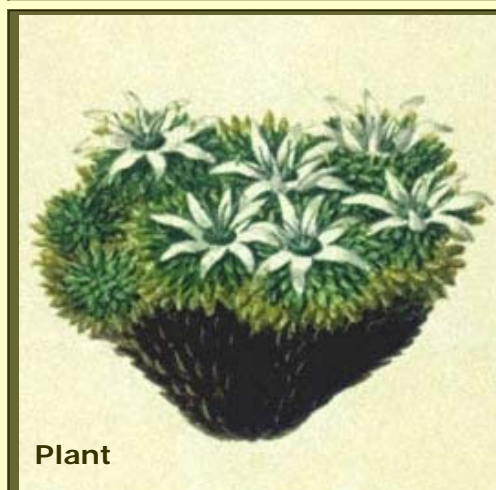
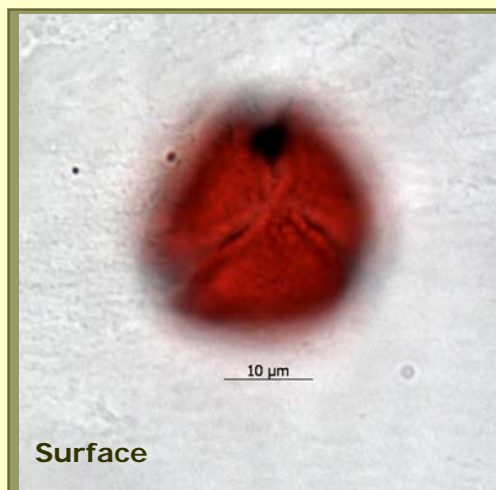
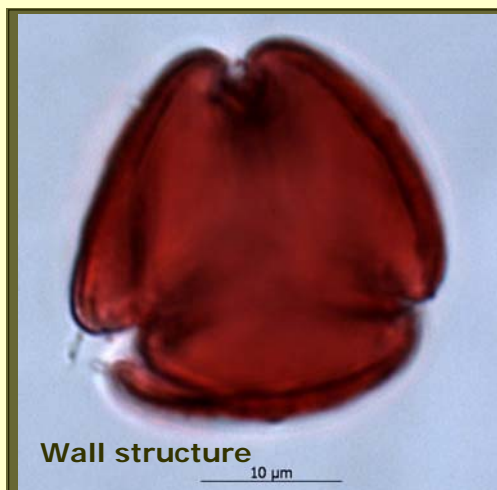
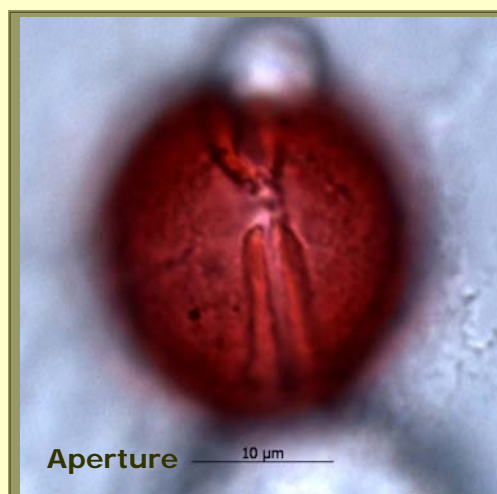
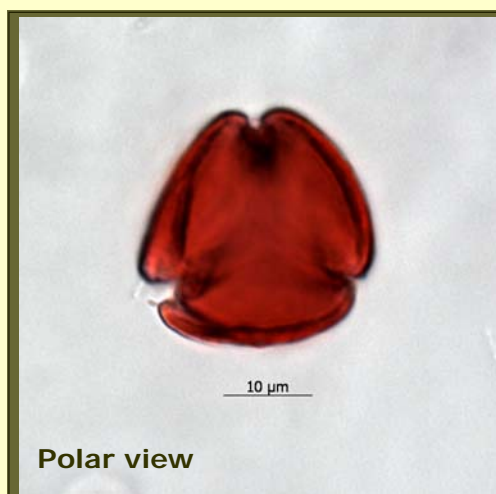
Slide Collection Cambridge

Coll. No. 91.29

Notes

**Ecology and Geographical Distribution:** Cushion-forming herbs, found in bogs, with *Astelia*, *Caltha* and *Sphagnum*. Range: Chile south of 40°S, Tierra del Fuego; 0-40m.

**Pollen morphology:** Pollen, in monad arrangement. Form: tricolporate, with 3 apertures. In polar view, shape is triangular(straight): 25-27  $\mu\text{m}$ . In equatorial view, shape is subprolate: 27-29  $\mu\text{m}$ . Exine is  $\sim 2\mu\text{m}$ , even, scabrate. Pores: circular, 2.8-3.5 $\mu\text{m}$ , plain. Colpi:  $>2/3$  length, 1.3 $\mu\text{m}$ .



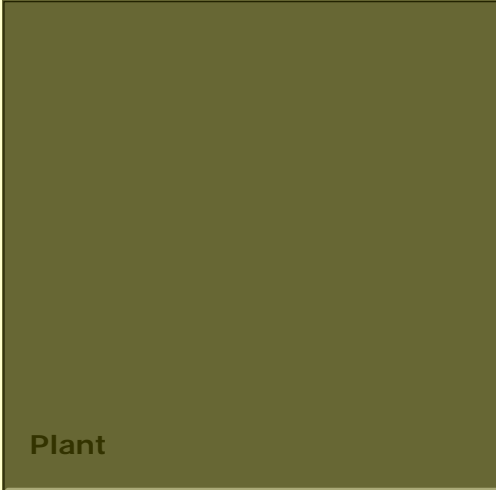
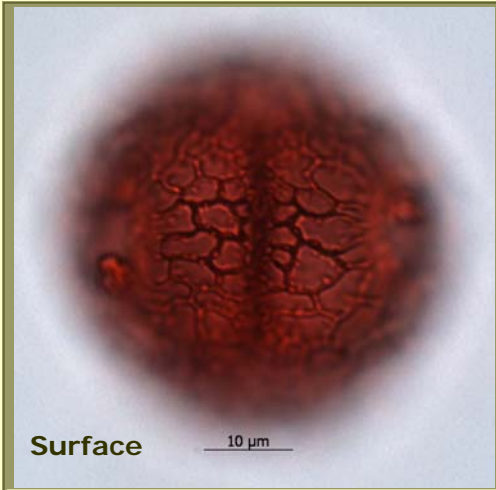
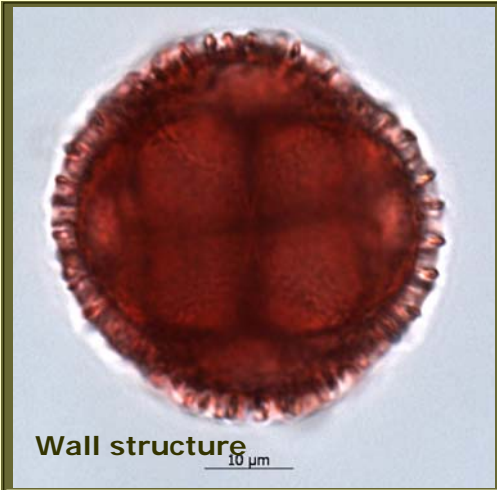
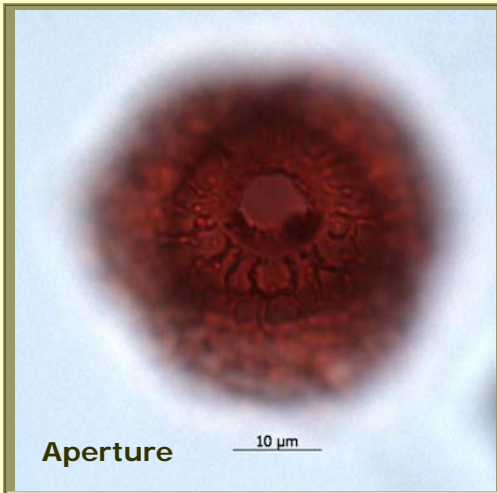


WINTERACEAE *Drimys confertifolia* Phil.

Collection Location	Region XI, Chile		
Slide Collection	Cambridge	Coll. No.	96.28
Notes			

**Ecology and Geographical Distribution:** Tree, found in mountainous areas and dominant in lowland forests, also often in hot, dry and exposed locations. Range: Juan Fernandez endemic; 200-900m.

**Pollen morphology:** Pollen, in tetrad arrangement. Form: monoporate, with 1 apertures. In polar view, shape is circular: 20-25  $\mu$ m. In equatorial view, shape is circular: 20-25  $\mu$ m. Total size of tetrad 26-45 $\mu$ m. Exine is ~4-4.5 $\mu$ m, even, coarse reticulate. Pores: circular, 5-6 $\mu$ m, thinning sexine. Colpi: N/A, - $\mu$ m.



## WINTERACEAE *Drimys winteri* Forst.

Collection Location Region XI, Chile

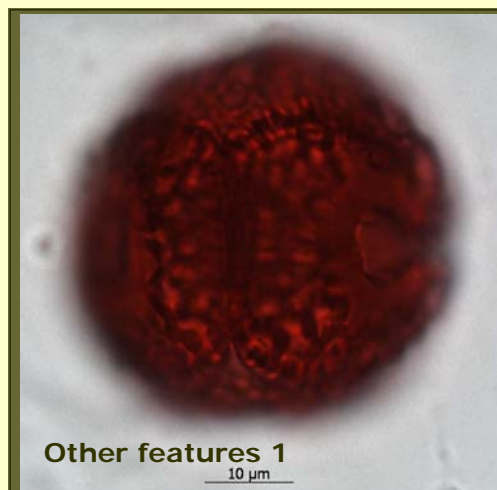
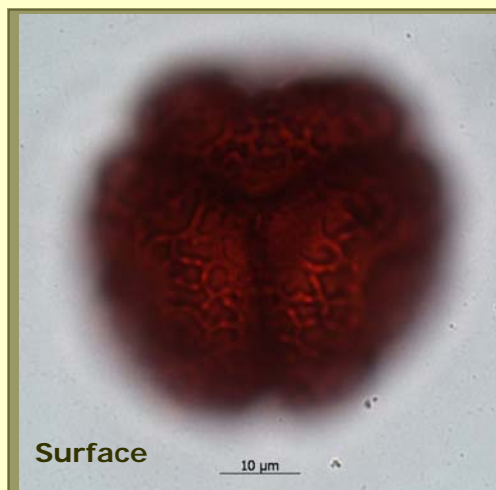
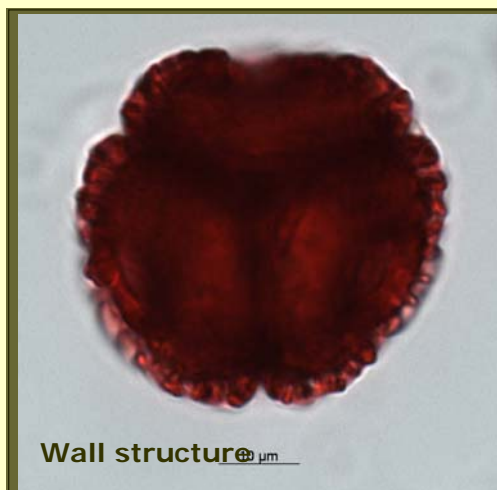
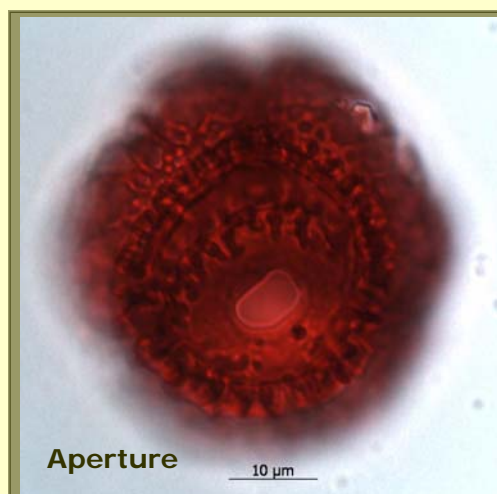
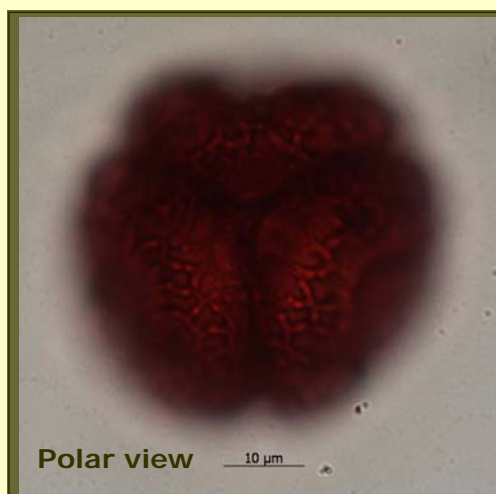
Slide Collection Cambridge

Coll. No. 95.56

Notes

**Ecology and Geographical Distribution:** Evergreen tree, found in locally dominant or co-dominant with *Nothofagus*, usually in lowland sites with abundant water. Range: Chile south of 36°S, Tierra del Fuego; 0 -300m.

**Pollen morphology:** Pollen, in tetrad arrangement. Form: monoporate, with 1 apertures. In polar view, shape is circular: 23-30  $\mu\text{m}$ . In equatorial view, shape is oblate: 23-30  $\mu\text{m}$ . Total size of tetrad 41-45 $\mu\text{m}$ . Exine is  $\sim 3\mu\text{m}$ , even, reticulate. Pores: circular, 4.5-7 $\mu\text{m}$ , thinning sexine. Colpi: N/A, - $\mu\text{m}$ .



References for plant photos and ecological descriptions: 1,5, 6



DICKSONIACEAE *Lophosoria quadripinnata* C.Chr.in Skottsb.

Collection Location Region XI, Chile

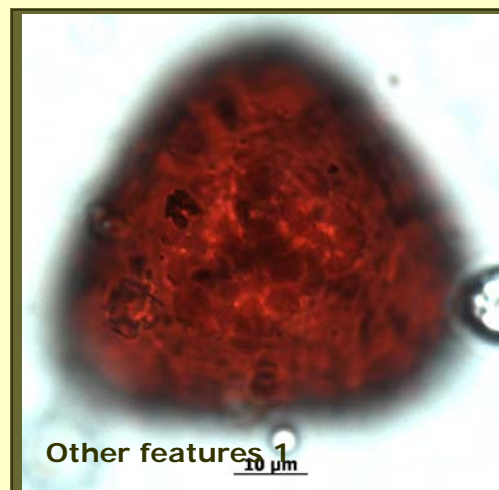
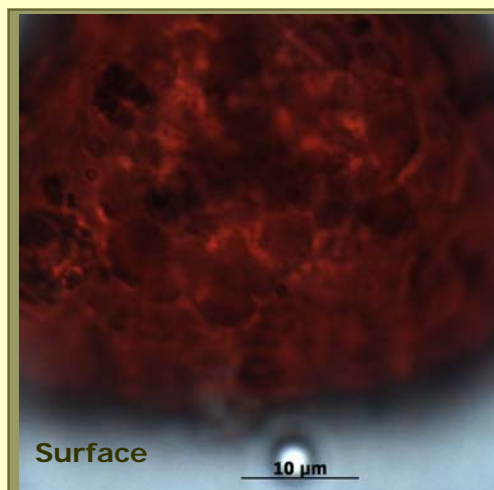
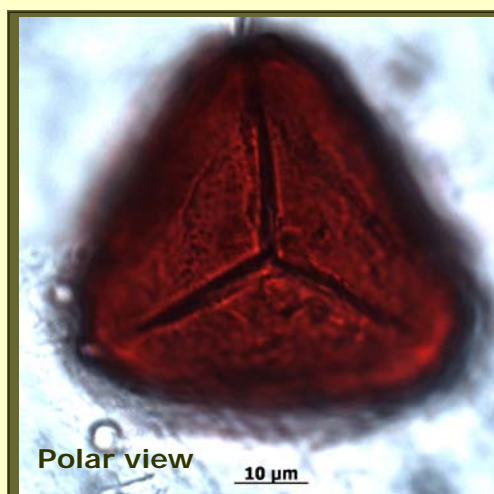
Slide Collection Cambridge

Coll. No. 91.27

Notes

**Ecology and Geographical Distribution:** Fern, found in wet shaded areas. Range: Region VII to Region XI; coastal and up to 100m.

**Pollen morphology:** Spore, in monad arrangement. Form: trilete, with apertures. In polar view, shape is triangular(straight): 48-55  $\mu\text{m}$ . In equatorial view, shape is rhombic(broad): 48-55  $\mu\text{m}$ . Exine is  $\sim 6\text{-}8\mu\text{m}$ , even, verrucate. Pores: N/A,  $\sim 1\mu\text{m}$ , . Colpi:  $>2/3$  length,  $2\mu\text{m}$ .



References for plant photos and ecological descriptions: 12



## GRAMMITIDACEAE *Grammitis magellanica* Desv.

Collection Location Region XI, Chile

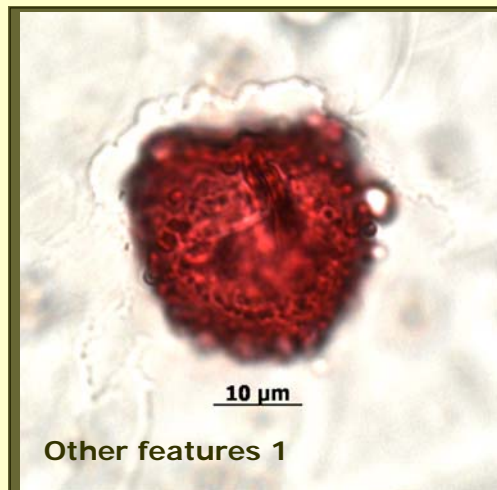
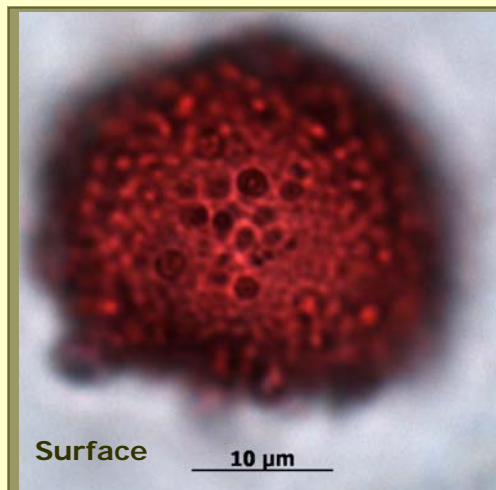
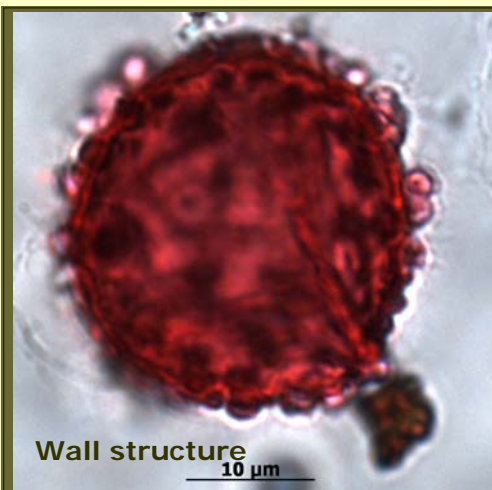
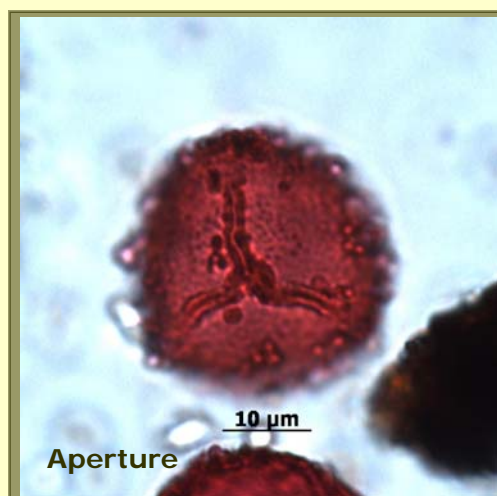
Slide Collection Cambridge

Coll. No. 91.26

Notes

**Ecology and Geographical Distribution:** Fern, found in damp rocks and rock crevices, epyphytic on *Nothofagus* and *Drimys*. Range: Chile south of 38°S, Tierra del Fuego, Falkland Islands, elsewhere globally; 0 -670m.

**Pollen morphology:** Spore, in monad arrangement. Form: trilete, with 1 apertures. In polar view, shape is triangular(convex): 25-28  $\mu\text{m}$ . In equatorial view, shape is suboblate: 23-26  $\mu\text{m}$ . Exine is  $\sim 3\mu\text{m}$ , even, clavate/pilate. Pores: N/A,  $-\mu\text{m}$ , . Colpi: 1/3 length, 2 $\mu\text{m}$ .



References for plant photos and ecological descriptions: 1, 2, 14



**Juan Fernandez Archipelago taxa****46-67****Pollen**

ASTERACEAE	<i>Dendroseris</i>	<i>litoralis</i>	46
ASTERACEAE	<i>Dendroseris</i>	<i>neriifolia</i>	47
ASTERACEAE	<i>Dendroseris</i>	<i>pinnata</i>	48
ASTERACEAE	<i>Erigeron</i>	<i>fruticosus</i>	49
ASTERACEAE	<i>Robinsonia</i>	<i>gracilis</i>	50
BERBERIDACEAE	<i>Berberis</i>	<i>corymbosa</i>	51
BROMELIACEAE	<i>Ochagavia</i>	<i>elegans</i>	52
CAMPANULACEAE	<i>Wahlenbergia</i>	<i>larraini</i>	53
CHENOPODIACEAE	<i>Chenopodium</i>	<i>crusoeanum</i>	54
ESCALLONIACEAE	<i>Escallonia</i>	<i>calcottiae</i>	55
EUPHORBIACEAE	<i>Dysopsis</i>	<i>sp.</i>	56
IRIDACEAE	<i>Libertia</i>	<i>chilensis</i>	57
LAMIACEAE	<i>Cuminia</i>	<i>eriantha</i>	58
PLANTAGINACEAE	<i>Plantago</i>	<i>sp.</i>	59
SOLANACEAE	<i>Nicotiana</i>	<i>cordifolia</i>	60
URTICACEAE	<i>Boehmeria</i>	<i>excelsa</i>	61
VERBENACEAE	<i>Rhaphithamnus</i>	<i>venustus</i>	62
WINTERACEAE	<i>Drimys</i>	<i>confertifolia</i>	63

**Fern spores**

BLECHNACEAE	<i>Blechnum</i>	<i>cycadifolium</i>	64
DICKSONIACEAE	<i>Dicksonia</i>	<i>externa</i>	65
GLEICHENIACEAE	<i>Gleichenia</i>	<i>pedalis</i>	66
OLEANDRACEAE	<i>Arthropteris</i>	<i>altescandens</i>	67

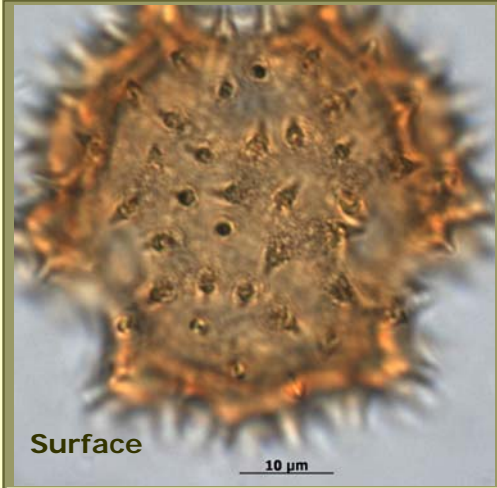
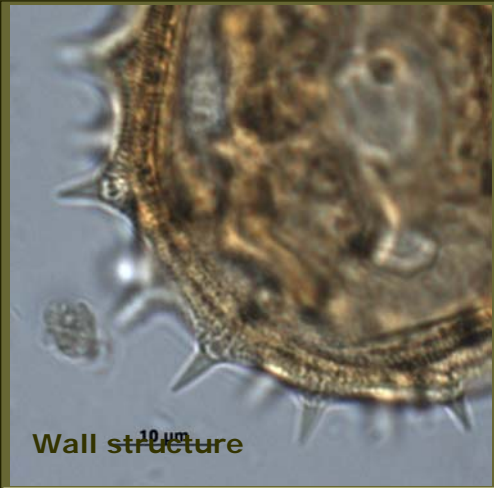
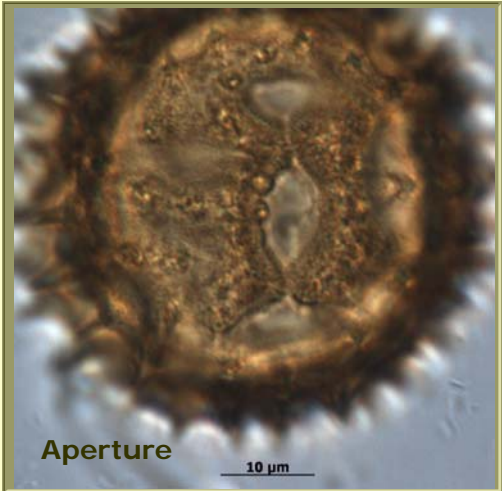
**References****68**

ASTERACEAE *Dendroseris litoralis* Skottsb.

Collection Location	Juan Fernandez Archipelago		
Slide Collection	JF Collection	Coll. No.	
Notes			

**Ecology and Geographical Distribution:** Shrub to small tree, found in open sunny lowland areas; coasta cliffs and among coastal rocks; endangered on Juan Fernandez but cultivated elsewhere. Range: Juan Fernandez endemic; coastal and low altitudes.

**Pollen morphology:** Pollen, in monad arrangement. Form: tricolporate, with 3 apertures. In polar view, shape is tri-lobate: 43-49 µm. In equatorial view, shape is subprolate: 44-54 µm. Exine is ~2.5-3.5µm, even, echinate. Pores: elliptic(tall), 3.5-5µm, sunken pore. Colpi: 1/3 length, 3.5-5µm.



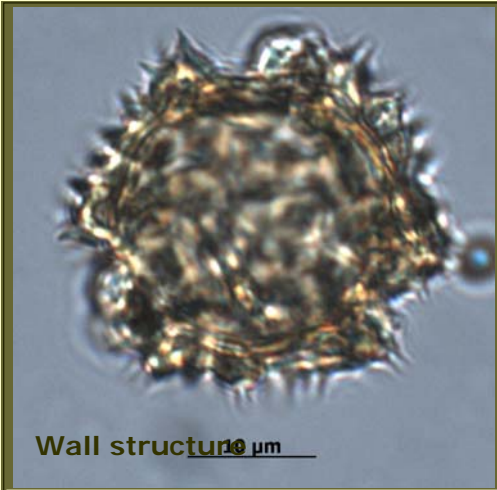
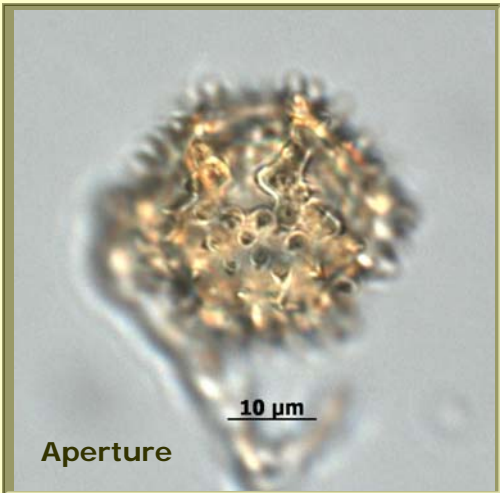


ASTERACEAE *Dendroseris neriifolia* Hook. & Arn.

Collection Location	Juan Fernandez		
Slide Collection	JF Collection	Coll. No.	
Notes	Grains on this slide are indistinct and are probably immature.		

**Ecology and Geographical Distribution:** Tree, found in dry rocky areas, very few native specimens remaining. Range: Juan Fernandez endemic; coastal.

**Pollen morphology:** Pollen, in monad arrangement. Form: tricolporate, with 3 apertures. In polar view, shape is tri-lobate: 23-29  $\mu\text{m}$ . In equatorial view, shape is subprolate: 23-29  $\mu\text{m}$ . Exine is  $\sim 1\mu\text{m}$ , even, echinate (spines  $\sim 2.5\mu\text{m}$ ). Pores: circular,  $\sim 2\mu\text{m}$ , plain. Colpi: 1/3 length,  $\sim 2\mu\text{m}$ .



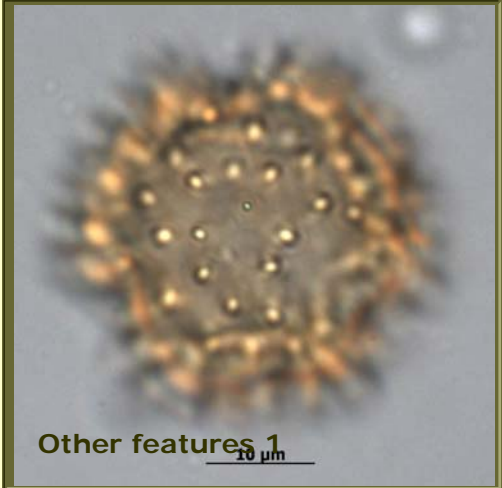
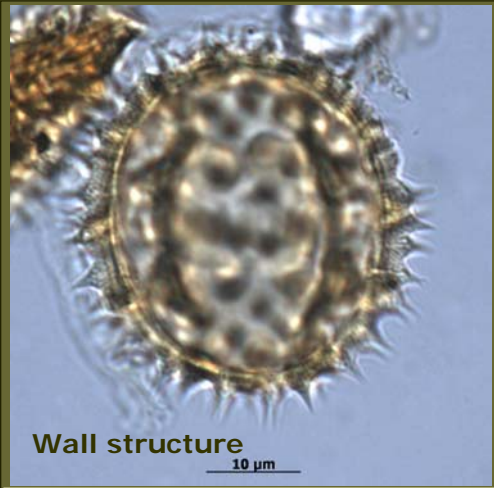


ASTERACEAE *Dendroseris pinnata* Hook. & Arn.

Collection Location	Juan Fernandez Archipelago		
Slide Collection	JF Collection	Coll. No.	
Notes			

**Ecology and Geographical Distribution:** Tree, found in coastal region, rocky dry areas. Range: Juan Fernandez endemic; to 500m.

**Pollen morphology:** Pollen, in monad arrangement. Form: tricolporate, with 3 apertures. In polar view, shape is tri-lobate: 23-30  $\mu$ m. In equatorial view, shape is subprolate: 23-35  $\mu$ m. Exine is  $\sim$ 2.5 $\mu$ m, even, echinate (spines 3-4 $\mu$ m). Pores: squared,  $\sim$ 5 $\mu$ m, plain. Colpi: 1/2 length, <5 $\mu$ m.



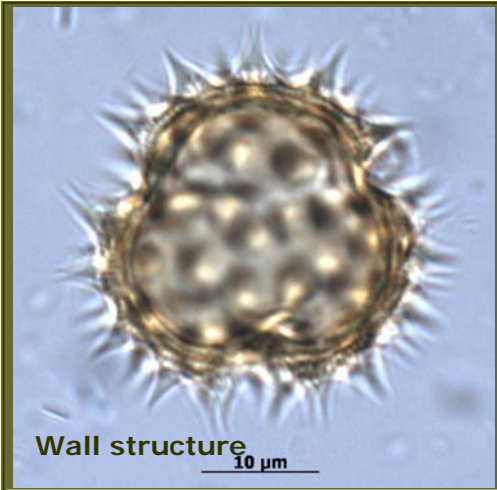
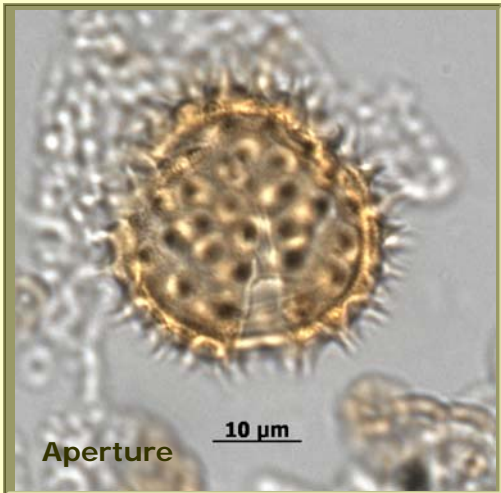


ASTERACEAE *Erigeron fruticosus* DC.

Collection Location	Juan Fernandez archipelago		
Slide Collection	JF collection	Coll. No.	
Notes	Not one of the six endemic Erigeron species in the Juan Fernandez.		

**Ecology and Geographical Distribution:** Shrub, found in various species found from dry and exposed to wet and foggy areas . Range: includes Juan Fernandez Islands; from sea level to 1000m.

**Pollen morphology:** Pollen, in monad arrangement. Form: tricolporate, with 3 apertures. In polar view, shape is tri-lobate: 24-26 µm. In equatorial view, shape is subprolate: 26-30 µm. Exine is ~2.5µm, even, echinate (spines 2.5µm). Pores: squared, 4µm, sunken pore. Colpi: 2/3 length, 4µm.

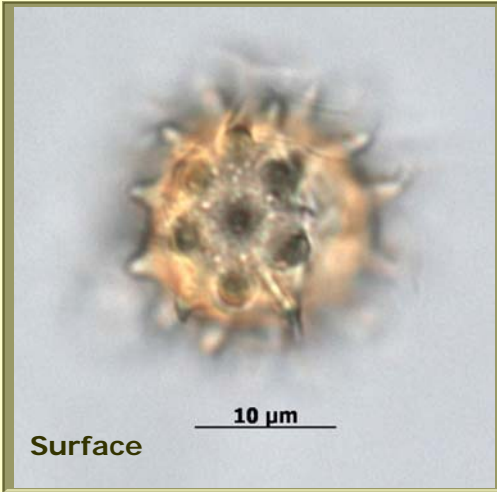
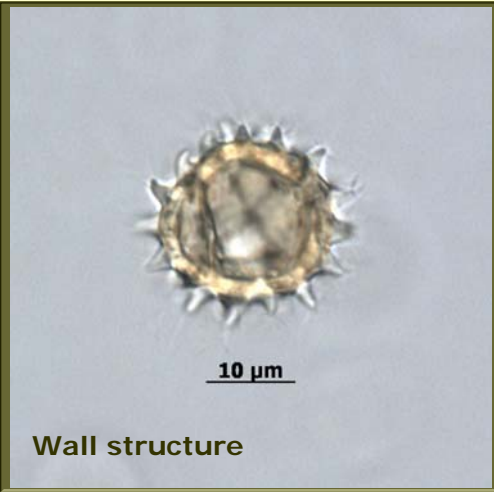
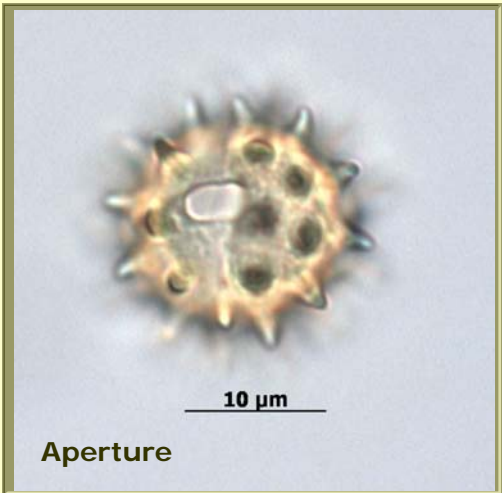
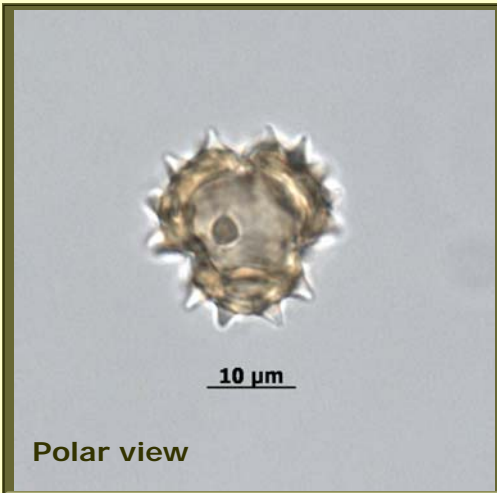


ASTERACEAE *Robinsonia gracilis* Decne.

Collection Location	Juan Fernandez archipelago		
Slide Collection	JF collection	Coll. No.	
Notes	Grains are immature on this slide.		

**Ecology and Geographical Distribution:** Small tree, found in summits of the northeast of the island. Range: Genus endemic to Juan Fernandez; below 500m.

**Pollen morphology:** Pollen, in monad arrangement. Form: tricolporate, with 3 apertures. In polar view, shape is tri-lobate: 15-20 µm. In equatorial view, shape is circular: 15-20 µm. Exine is ~3-4µm, even, echinate (spines 2-3µm). Pores: rectangular(broad), ~4µm, sunken pore. Colpi: 1/2 length, ~3µm.



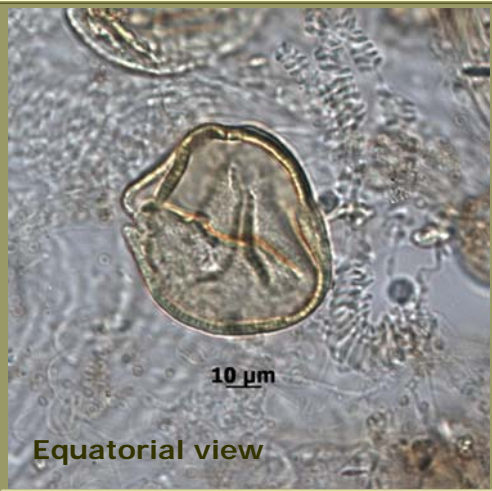


BERBERIDACEAE *Berberis corymbosa* Hook. & Arn.

Collection Location	Juan Fernandez Archipelago		
Slide Collection	JF Collection	Coll. No.	
Notes	Varied grains		

**Ecology and Geographical Distribution:** Shrub, found in rare species in humid forest or scrub. Range: Juan Fernandez endemic; highlands.

**Pollen morphology:** Pollen, in monad arrangement. Form: spiraperturate, with 1 apertures. In polar view, shape is circular: 49-71  $\mu\text{m}$ . In equatorial view, shape is circular: 49-71  $\mu\text{m}$ . Exine is  $\sim 3.3\text{-}4.4\mu\text{m}$ , even, scabrate. Pores: N/A,  $-\mu\text{m}$ , . Colpi: irregular, 1-5 $\mu\text{m}$ .

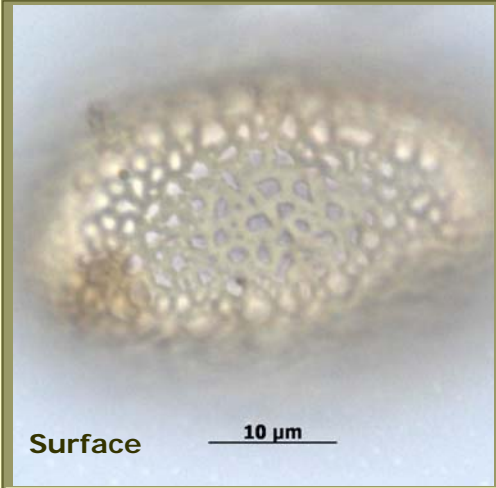
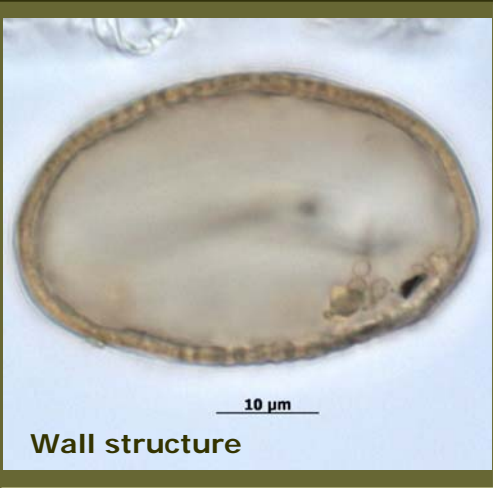
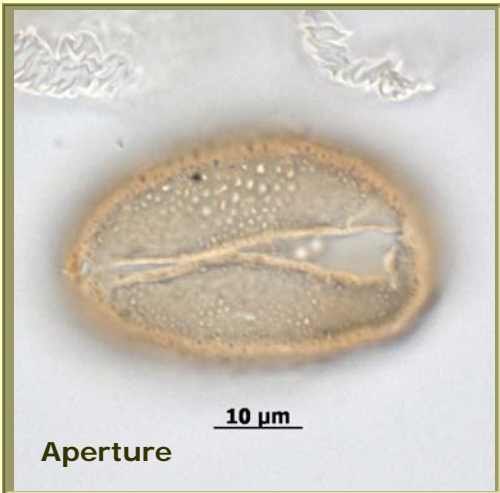
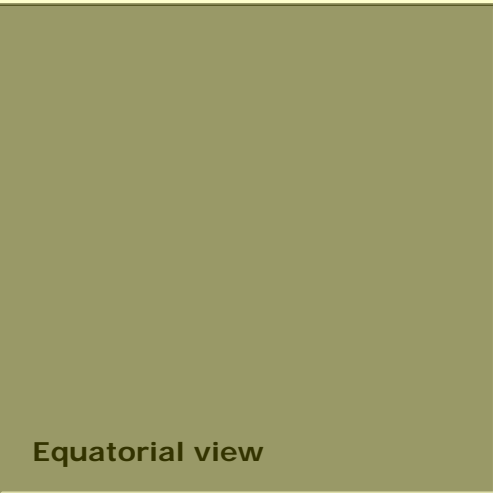


BROMELIACEAE *Ochagavia elegans* Phil.

Collection Location	Juan Fernandez archipelago		
Slide Collection	JF collection	Coll. No.	
Notes			

**Ecology and Geographical Distribution:** Herb, found in all rocky places, often forming dense colonies on sunny cliff faces. Range: Endemic to Juan Fernandez islands; all altitudes.

**Pollen morphology:** Pollen, in monad arrangement. Form: monocolpate(monosulcate), with 1 apertures. In polar view, shape is elliptic: 37-52 µm. In equatorial view, shape is suboblate: 23-29 µm. Exine is ~1.7-2.4µm, even, coarse reticulate. Pores: N/A, -µm, . Colpi: full length, 1-6µm.





# Chilean Pollen Reference Collection

CAMPANULACEAE *Wahlenbergia larraini* Skottsb.

Collection Location Juan Fernandez archipelago

Slide Collection JF collection

Coll. No.

Notes Will probably be included in the same species as *W. fernandeziana*<sup>8</sup>. Plant photos below are of *W. fernandeziana*.

**Ecology and Geographical Distribution:** woody shrub, found in alpine areas. Range: Juan Fernandez endemic; unknown altitudes.

**Pollen morphology:** Pollen, in monad arrangement. Form: triporate, with 3 apertures. In polar view, shape is triangular(convex): 27-30  $\mu\text{m}$ . In equatorial view, shape is suboblate: 30-33  $\mu\text{m}$ . Exine is  $\sim 1.3$ -1.8 $\mu\text{m}$ , thinner on pole, micro-echinate (spines  $< 1\mu\text{m}$ ). Pores: circular w/ annulus, 5-6 $\mu\text{m}$ , plain. Colpi: N/A, - $\mu\text{m}$ .



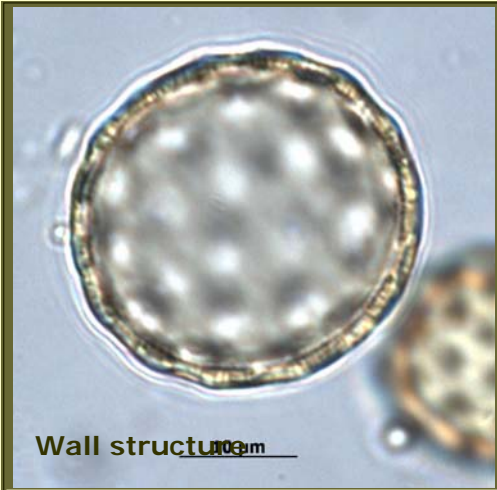
References for plant photos and ecological descriptions: 8, 13

CHENOPODIACEAE *Chenopodium cruseoanum* Skottsb.

Collection Location	Juan Fernandez Archipelago		
Slide Collection	JF Collection	Coll. No.	
Notes			

**Ecology and Geographical Distribution:** Herb, found in cultivated areas, very rare.. Range: Juar Fernandez endemic; low altitude areas.

**Pollen morphology:** Pollen, in monad arrangement. Form: periporate, with many apertures. In polar view, shape is circular: 17-30  $\mu\text{m}$ . In equatorial view, shape is circular: 17-30  $\mu\text{m}$ . Exine is  $\sim 1.8\text{--}2.3\mu\text{m}$ , even, scabrate. Pores: circular,  $2.7\text{--}3.7\mu\text{m}$ , sunken pore. Colpi: N/A,  $-\mu\text{m}$ .





## ESCALLONIACEAE *Escallonia calcottiae* Hook. & Arn.

Collection Location Juan Fernandez Archipelago

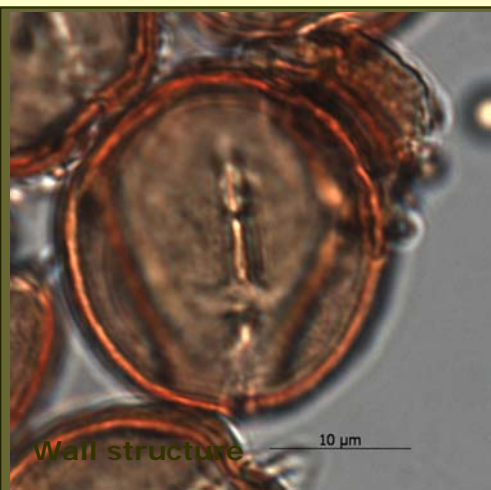
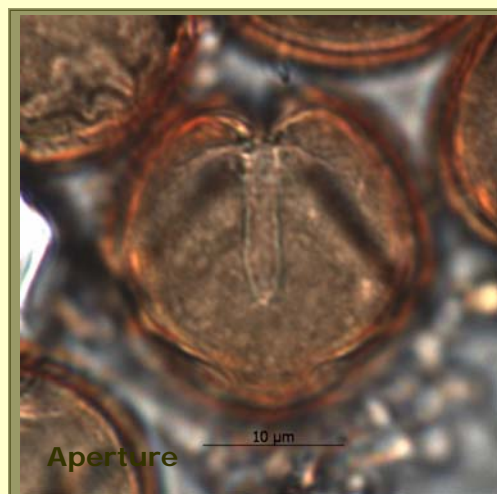
Slide Collection Cambridge

Coll. No. 96.26

Notes Few grains on this slide

**Ecology and Geographical Distribution:** Shrub, found in found in open and closed forests, as well as exposed barren areas and mountains. Common. Range: Juan Fernandez endemic; above coastal zone.

**Pollen morphology:** Pollen, in monad arrangement. Form: tricolporate, with 3 apertures. In polar view, shape is triangular(straight): 20-25  $\mu\text{m}$ . In equatorial view, shape is circular: 21-24  $\mu\text{m}$ . Exine is  $\sim 1.5\mu\text{m}$ , even, scabrate. Pores: lolongate, 4-5 $\mu\text{m}$ , sunken pore. Colpi: 1/3 length, 2.5 $\mu\text{m}$ .



References for plant photos and ecological descriptions: 2



## EUPHORBIACEAE *Dysopsis* sp.

Collection Location	Juan Fernandez archipelago		
Slide Collection	JF collection	Coll. No.	
Notes	Ecological information and botanical pictures below are for <i>Dysopsis glechmoides</i> .		

**Ecology and Geographical Distribution:** Herb, found in moist shady places, especially in forest and scrub, but also stream banks and tall bog communities. Range: Chile south of 40°S; 0-500m.

**Pollen morphology:** Pollen, in monad arrangement. Form: tricolpate, with 3 apertures. In polar view, shape is triangular(concave): 22-28  $\mu\text{m}$ . In equatorial view, shape is circular: 22-28  $\mu\text{m}$ . Exine is  $\sim 1\mu\text{m}$ , even, reticulate. Pores: N/A,  $-\mu\text{m}$ , . Colpi: 1/2 length,  $\sim 1\mu\text{m}$ .



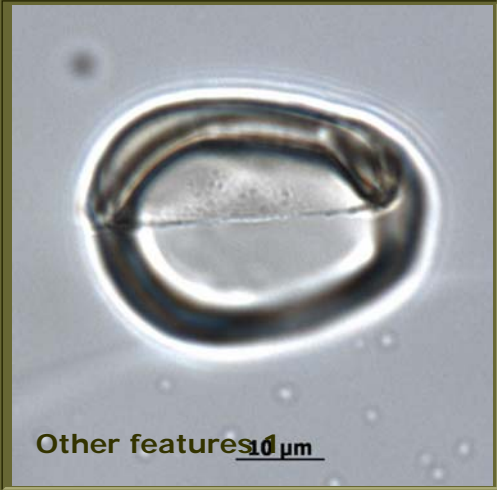
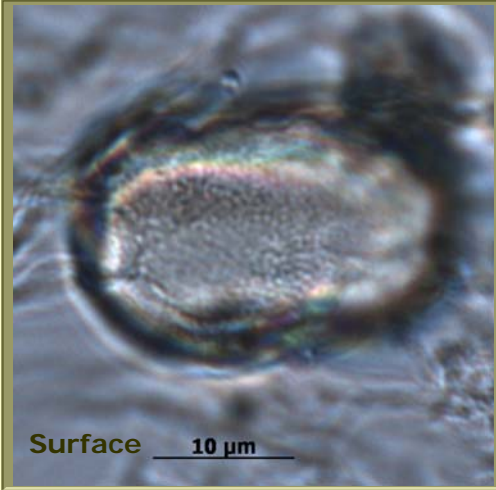
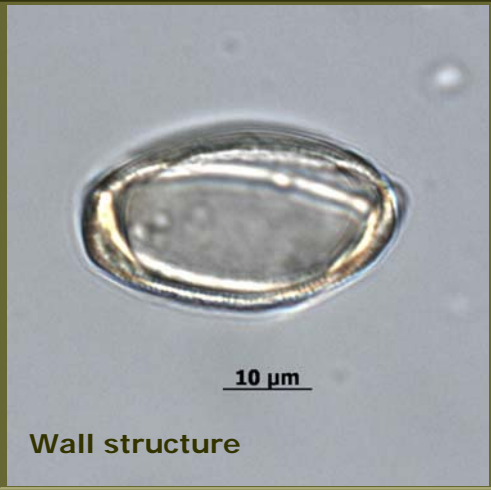


IRIDACEAE *Libertia chilensis* Gunckel

Collection Location	Juan Fernandez archipelago		
Slide Collection	JF Collection	Coll. No.	
Notes	Grains appear to be immature.		

**Ecology and Geographical Distribution:** Herb, found in open and sunny places. Range: South of Region VI; coastal and up to 100m.

**Pollen morphology:** Pollen, in monad arrangement. Form: monocolpate(monosulcate), with 1 apertures. In polar view, shape is elliptic: 27-36  $\mu\text{m}$ . In equatorial view, shape is irregular to pear shaped: 19-26  $\mu\text{m}$ . Exine is  $\sim 1.2\mu\text{m}$ , even, very fine reticulate. Pores: N/A,  $\sim \mu\text{m}$ , . Colpi: full length,  $<1\mu\text{m}$ .





## LAMIACEAE *Cuminia eriantha* Benth.

Collection Location Juan Fernandez Archipelago

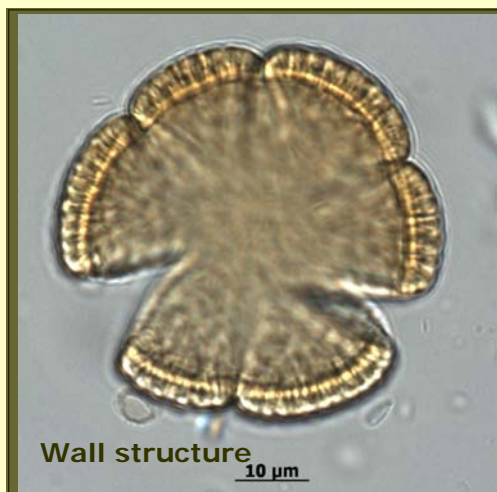
Slide Collection JF Collection

Coll. No.

Notes

**Ecology and Geographical Distribution:** Tree, found in upper montane forest. Endangered. Range: Juan Fernandez endemic; higher areas.

**Pollen morphology:** Pollen, in monad arrangement. Form: stephanocolpate, with 6 apertures. In polar view, shape is circular: 40-51  $\mu\text{m}$ . In equatorial view, shape is subprolate: 44-48  $\mu\text{m}$ . Exine is  $\sim 2.8$ -3.4  $\mu\text{m}$ , even, reticulate. Pores: N/A,  $-\mu\text{m}$ , . Colpi:  $>2/3$  length,  $<1\mu\text{m}$ .





## PLANTAGINACEAE *Plantago* sp.

Collection Location	Juan Fernandez archipelago		
Slide Collection	JF collection	Coll. No.	
Notes	Botanical photo is probably <i>P. major</i> .		

**Ecology and Geographical Distribution:** Herb, found in wet areas, often an indicator of disturbance, some species native, some introduced. Range: Varies for species, mostly between Region III and Region X; coastal to high altitudes.

**Pollen morphology:** Pollen, in monad arrangement. Form: periporate, with many apertures. In polar view, shape is circular: 29-36  $\mu\text{m}$ . In equatorial view, shape is circular: 29-36  $\mu\text{m}$ . Exine is  $\sim 1.6\text{-}2\mu\text{m}$ , even, scabrate. Pores: circular w/ annulus, 2.7-3.3 $\mu\text{m}$ , plain. Colpi: N/A, - $\mu\text{m}$ .



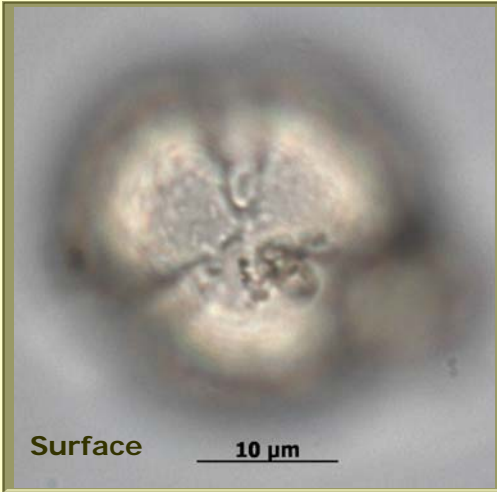
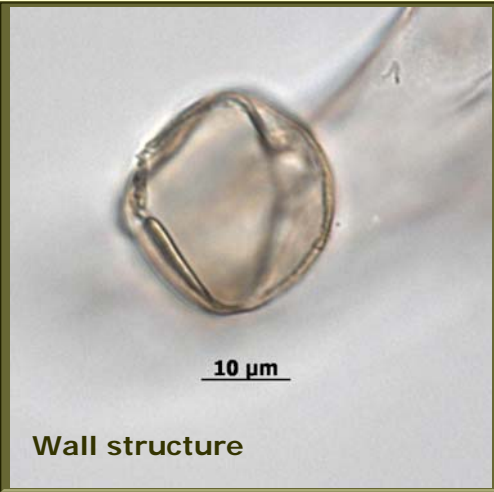
References for plant photos and ecological descriptions: 5

SOLANACEAE *Nicotiana cordifolia* Phil.

Collection Location	Juan Fernandez archipelago		
Slide Collection	JF collection	Coll. No.	
Notes			

**Ecology and Geographical Distribution:** Shrub, found in rocky and exposed areas. Range: Juan Fernandez endemic; coastal.

**Pollen morphology:** Pollen, in monad arrangement. Form: tricolporate, with 3 apertures. In polar view, shape is circular: 24-25 µm. In equatorial view, shape is subprolate: 25-27 µm. Exine is ~1.2µm, thicker on pole, scabrate. Pores: rectangular(broad), 3.5x5.8µm, plain. Colpi: >2/3 length, ~3.5µm.





## URTICACEAE *Boehmeria excelsa* Wedd.

Collection Location Juan Fernandez Archipelago

Slide Collection JF Collection

Coll. No.

Notes

**Ecology and Geographical Distribution:** Tree, found in lower montane areas. Range: Juan Fernandez endemic; mid altitudes.

**Pollen morphology:** Pollen, in monad arrangement. Form: triporate, with 3 apertures. In polar view, shape is circular: 15-18  $\mu\text{m}$ . In equatorial view, shape is circular: 15-18  $\mu\text{m}$ . Exine is  $\sim 0.5\text{--}0.8\mu\text{m}$ , even, scabrate. Pores: circular, 1.2-1.5 $\mu\text{m}$ , plain. Colpi: N/A, - $\mu\text{m}$ .



Equatorial view



Polar view



Aperture



Wall structure



Surface



Other features 1

Other features 2



Plant



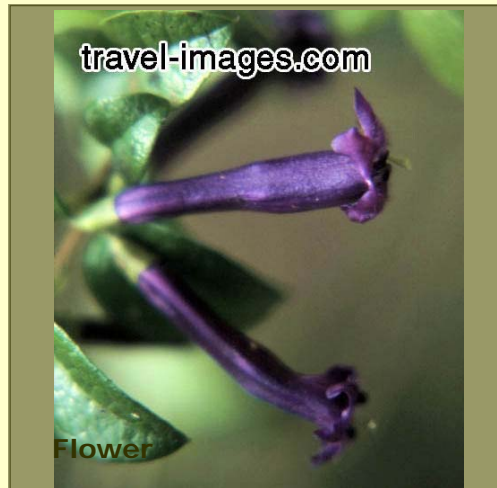
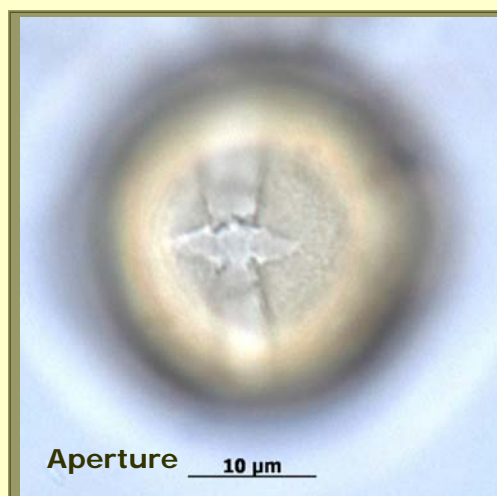
Flower

## VERBENACEAE *Rhaphithamnus venustus* B.L.Rob.

Collection Location	Juan Fernandez archipelago		
Slide Collection	JF collection	Coll. No.	
Notes	These grains are much smaller than those described in the Heusser volume, and are possibly a different species.		

**Ecology and Geographical Distribution:** Tree, found in higher and humid areas, mixed forests with other trees and ferns. Range: Juan Fernandez endemic; 0-500m.

**Pollen morphology:** Pollen, in monad arrangement. Form: tricolporate, with 3 apertures. In polar view, shape is circular: 24-30  $\mu\text{m}$ . In equatorial view, shape is prolate: 29-34  $\mu\text{m}$ . Exine is  $\sim 1.4$ -1.6 $\mu\text{m}$ , even, scabrate. Pores: rhombic(broad), 3-4x7-9 $\mu\text{m}$ , plain. Colpi: 1/2 length, 2-4 $\mu\text{m}$ .



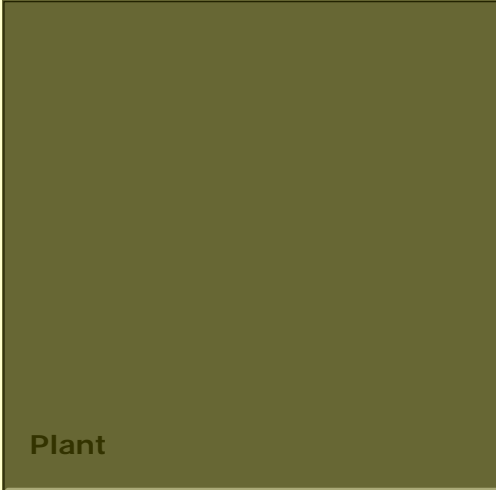
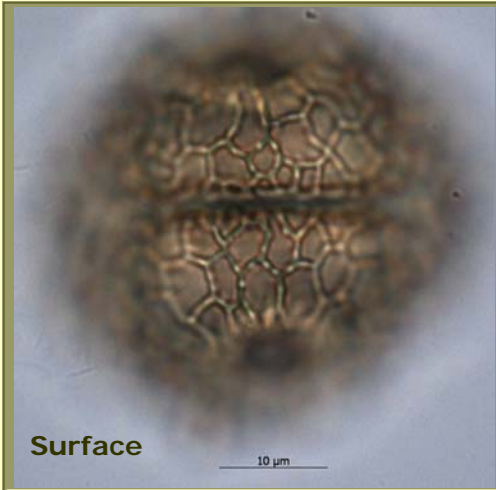


WINTERACEAE *Drimys confertifolia* Phil.

Collection Location	Juan Fernandez Islands, Chile		
Slide Collection	JF Collection	Coll. No.	
Notes			

**Ecology and Geographical Distribution:** Tree, found in mountainous areas and dominant in lowland forests, also often in hot, dry and exposed locations. Range: Juan Fernandez endemic; 200-900m.

**Pollen morphology:** Pollen, in tetrad arrangement. Form: monoporate, with 1 apertures. In polar view, shape is circular: 20-25  $\mu$ m. In equatorial view, shape is circular: 20-25  $\mu$ m. Total size of tetrad 35-45 $\mu$ m. Exine is ~4-4.5 $\mu$ m, even, reticulate. Pores: circular, 5-6 $\mu$ m, thinning sexine. Colpi: N/A, - $\mu$ m.





## BLECHNACEAE *Blechnum cycadifolium* (Colla) Sturm

Collection Location Juan Fernandez Archipelago

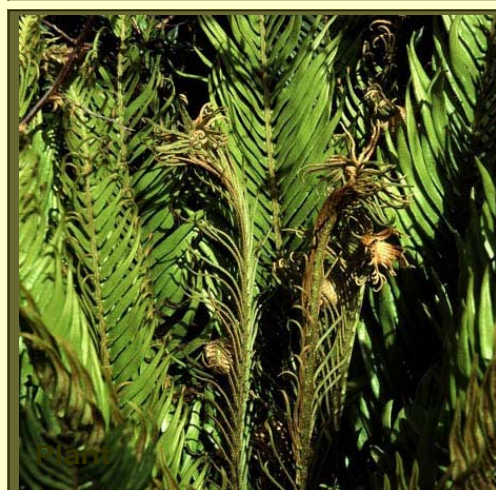
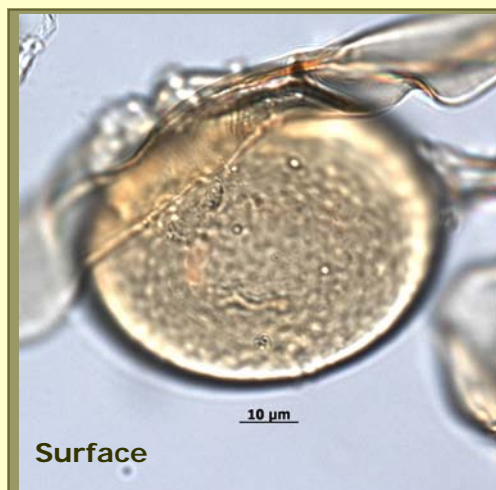
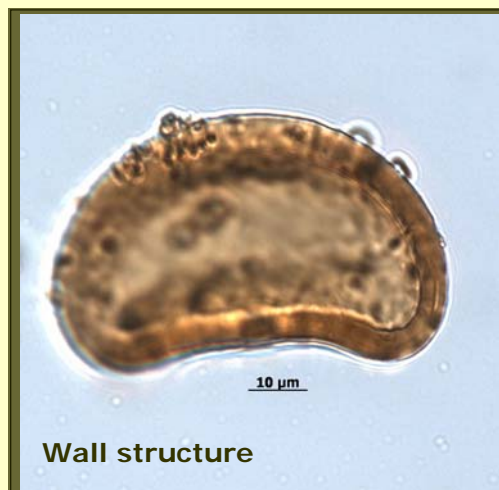
Slide Collection JF Collection

Coll. No.

Notes

**Ecology and Geographical Distribution:** Fern, found in hillsides and cliffs, open and windy areas. Range: Juan Fernandez endemic; coastal to high altitudes.

**Pollen morphology:** Spore, in monad arrangement. Form: monolete, with 1 apertures. In polar view, shape is monolete: 57-68  $\mu\text{m}$ . In equatorial view, shape is circular: 37-50  $\mu\text{m}$ . Exine is  $\sim 3\mu\text{m}$ , even, verrucate. Pores: N/A,  $-\mu\text{m}$ , . Colpi:  $>2/3$  length, 1-3 $\mu\text{m}$ .



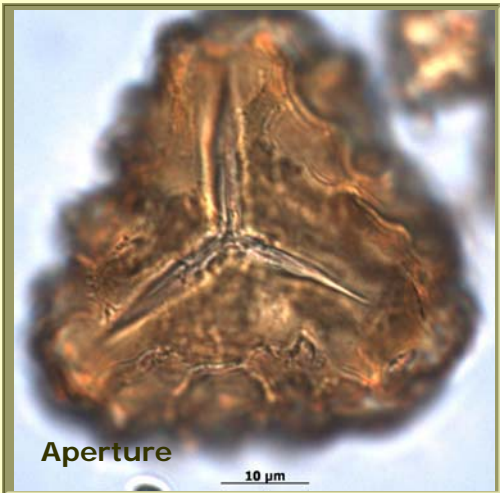
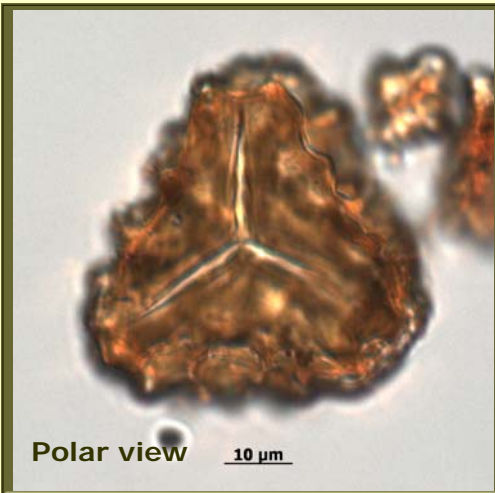
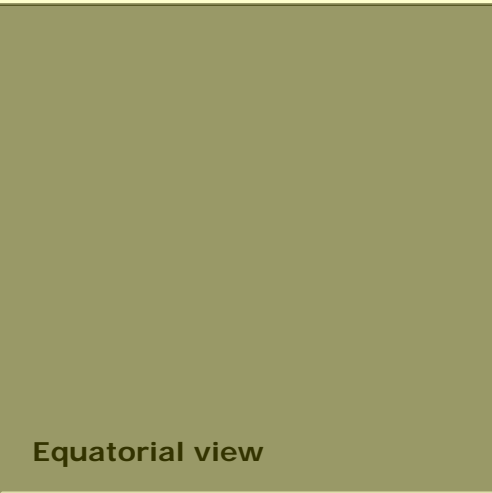


DICKSONIACEAE *Dicksonia externa* Skottsb.

Collection Location	Juan Fernandez archipelago		
Slide Collection	JF Collection	Coll. No.	
Notes			

**Ecology and Geographical Distribution:** Tree fern, found in low mountain zone, high mountain zone, canyon zone and subalpine zone, where it is dominant. Range: Juan Fernandez endemic; alpine.

**Pollen morphology:** Spore, in monad arrangement. Form: trilete, with 1 apertures. In polar view, shape is triangular(straight): 49-51  $\mu\text{m}$ . In equatorial view, shape is rectangular(broad):  $\sim 20\text{-}30\text{ }\mu\text{m}$ . Exine is  $\sim 4\text{-}5\mu\text{m}$ , even, verrucate. Pores: N/A,  $\sim\mu\text{m}$ , . Colpi: 2/3 length, 1-3 $\mu\text{m}$ .



GLEICHENIACEAE *Gleichenia pedalis* (Klf.) Spreng.

Collection Location	Juan Fernandez archipelago		
Slide Collection	JF Collection	Coll. No.	
Notes	This fern possibly has a synonym? <i>G. lepidota</i> endemic to Juan Fernandez <sup>30</sup> .		

Ecology and Geographical Distribution: Fern, found in . Range: ; .

Pollen morphology: Spore, in monad arrangement. Form: monolete, with 1 apertures. In polar view, shape is monolete: 32-35 µm. In equatorial view, shape is circular: 17-21 µm. Exine is ~1.2µm, even, echinate (with very fine hairs). Pores: N/A, -µm, . Colpi: 1/2 length, 1-3µm.

Equatorial view

Polar view

10 µm

Aperture

10 µm

Wall structure

10 µm

Surface

10 µm

Other features 1

Other features 2

Plant

Flower

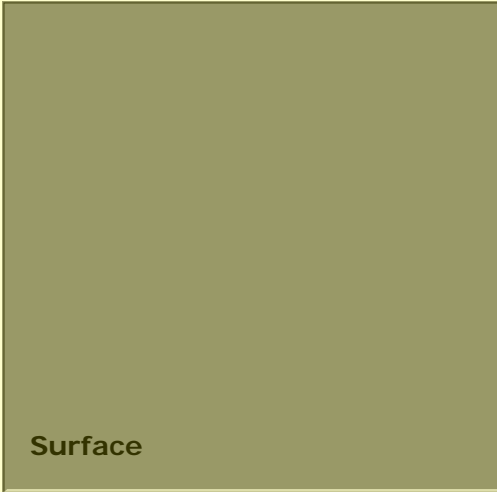
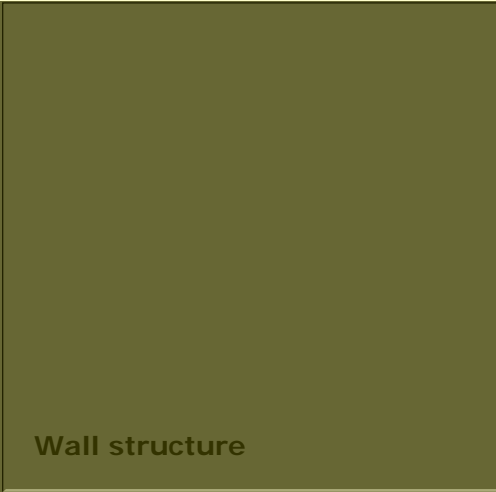
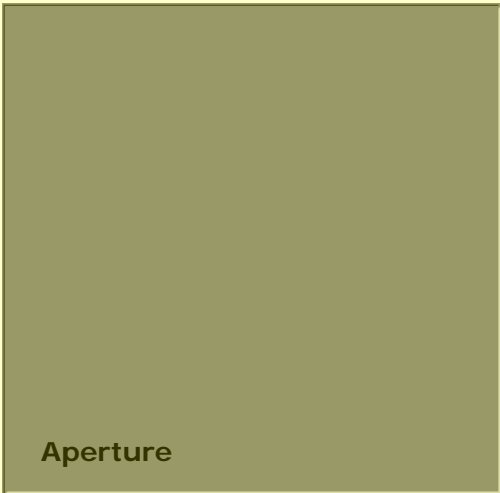


OLEANDRACEAE *Arthropteris altescandens* (Colla) J.Sm.

Collection Location	Juan Fernandez Archipelago		
Slide Collection	JF Collection	Coll. No.	
Notes	No good spores on slide; parts of description after Heusser (1971).		

**Ecology and Geographical Distribution:** Fern, found in moist areas, covers ground and climbs on tree ferns. Range: Juan Fernandez endemic; low forest.

**Pollen morphology:** Spore, in monad arrangement. Form: monolete, with 1 apertures. In polar view, shape is elliptic: 42-55  $\mu\text{m}$ . In equatorial view, shape is circular: 38-46  $\mu\text{m}$ . Exine is  $\sim 1\mu\text{m}$ , even, psilate. Pores: N/A,  $-\mu\text{m}$ , . Colpi: 2/3 length,  $1\mu\text{m}$ .



**Chilean Pollen Reference Collection**  
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